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KHAWA KARPO

TIBETAN TRADITIONAL KNOWLEDGE AND BIODIVERSITY CONSERVATION

Jan Salick and Robert K. Moseley

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Jan Salick and Robert K. Moseley

MISSOURI BOTANICAL GARDEN

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Cover photos: Khawa Karpo Peak and the Menri Range at full moon. Photograph by Fang Zhendong; Tibetan woman selling matsutake (*Tricholoma matsutake*) mushrooms. Photograph by Jan Salick; *Rhododendron sanguineum* from the meadows above Yubeng village. Photograph by Robert Moseley; Tibetan household shrine where daily prayers and offerings are made. Photograph by Jan Salick.

Verso title page photo: Pilgrims and prayer flags crowd Dokerla Pass, a sacred threshold on the route for pilgrims circumambulating Mt. Khawa Karpo. Photograph by Fang Zhendong.

Foreword frontispiece photo: Mt. Miancimu, named for the mythological consort of Khawa Karpo. Photograph by Robert Moseley.

Chapter 1 frontispiece photo: Mt. Khawa Karpo is the highest peak (6740 m) in the Menri or Medicine Mountains, known for their biodiversity, medicinal plants, and cultural significance. Photograph by Robert Moseley.

Appendix 1 frontispiece photo: *Gentiana atuntsiensis*. Photograph by Fang Zhendong.

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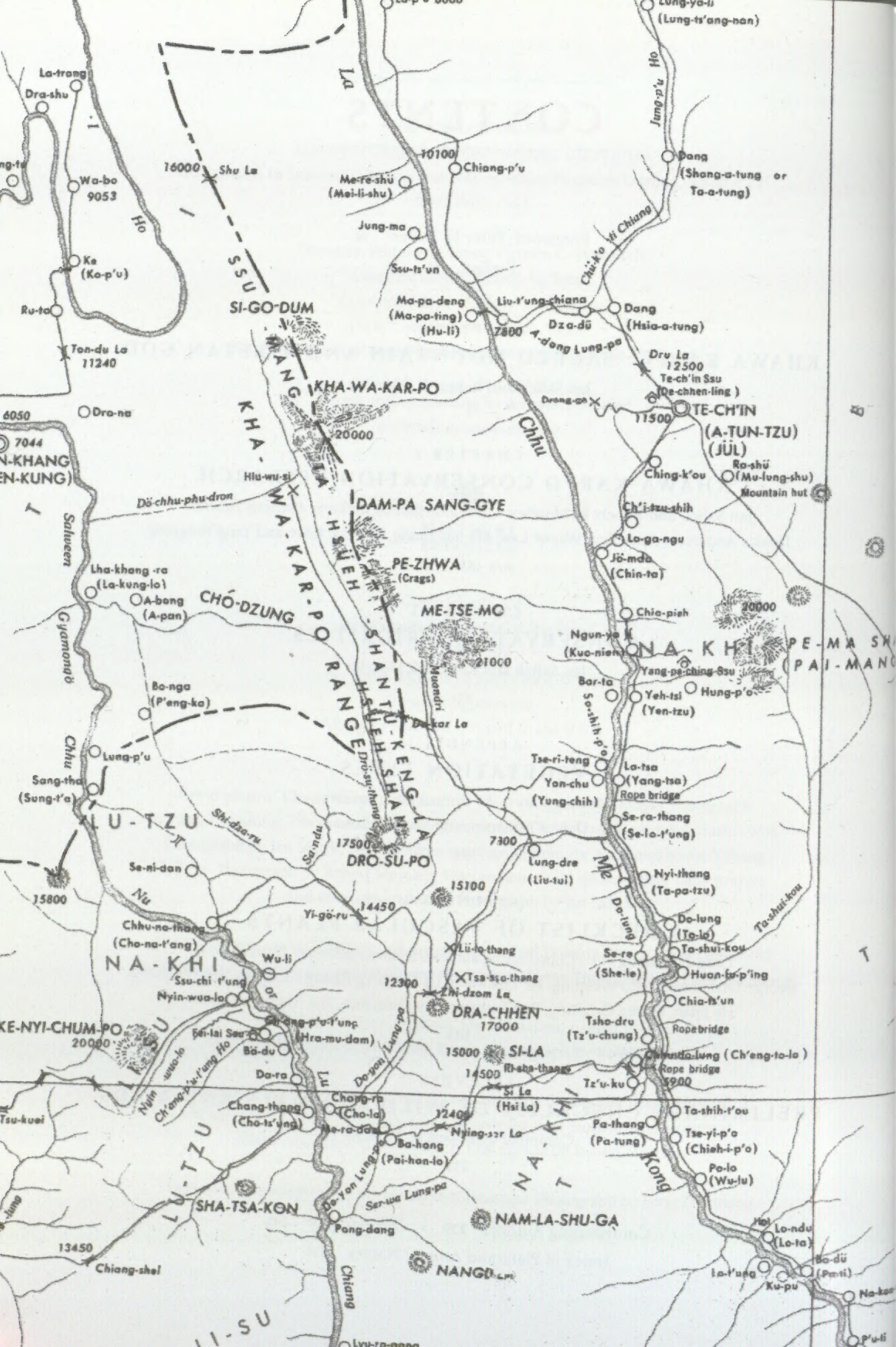
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(Ko-p'u)
Ru-ta
Ton-du La
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6050
Dro-na
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N-KHANG
EN-KUNG)
16000
Shu La
SI-GO-DUM
KHA-WA-KAR-PO
20000
Hlu-wu-si
Dö-chhu-phu-dron
DAM-PA SANG-GYE
PE-ZHWA
(Crags)
ME-TSE-MO
21000
Muondri
Da-kar La
HSUEH-SHAN TU-KENG-LA
Dro-su-thang
17500
DRO-SU-PO
15100
Lung-dre
(Liu-tui)
7300
Salween
Lha-khang-ra
(La-kung-lo)
A-bong
(A-pan)
CHÓ-DZUNG
Gyamonö
Bo-nga
(P'eng-ka)
Lung-p'u
Sang-tha
(Sung-t'a)
LU-TZU
15800
Se-ni-dan
Chhu-na-thang
(Cho-na-t'ang)
Yi-gö-ru
14450
Wu-li
NA-KHI
Ssu-chi t'ung
or
Nyin-wua-lo
Chang-p'u-t'ung
(Hra-mu-dam)
Bai-lai Sau
Bö-du
Da-ra
Chang-thang
(Cho-ts'ung)
Ne-ra-dau
Ba-hang
(Pai-hao-lo)
Tsu-kuei
KE-NYI-CHUM-PO
20000
SHA-TSA-KON
13450
Chiang-shel
Pong-dang
Da-yon Lung-po
Ser-tsa Lung-pa
NAM-LA-SHU-GA
NANGO
Chiang
LI-SU
Lyu-ta-pang
Lu
Nyin-wua-lo
Ch'ang-p'u-t'ung Ho
Dö-pon Lung-pa
Tsa-sso-thang
Chi-dzom La
DRA-CHHEN
17000
12300
SI-LA
15000
Ri-sha-thang
14500
Si La
(Hsi La)
12400
Nying-ssr La
Tz'u-ku
5900
Tsho-dru
(Tz'u-chung)
Rope bridge
Chhung-lung (Ch'eng-to-lo)
Rope bridge
Ta-shih-t'ou
Pa-thang
(Pa-tung)
Tse-yi-p'o
(Chieh-i-p'o)
Po-lo
(Wu-lu)
Lo-ndu
(Lo-ta)
Ba-dü
(Pa-ti)
Ku-pu
Na-kor
P'u-li
Ta-shui-kou
Huan-tu-p'ing
Chia-ts'un
Se-re
(She-le)
Do-lung
(To-le)
Nyi-thang
(Ta-pa-tzu)
Se-ra-thang
(Se-lo-t'ung)
Yon-chu
(Yung-chih)
La-tsa
(Yang-tsa)
Rope bridge
Tse-ri-teng
Yeh-tsi
(Yen-tzu)
Hung-p'o
Bar-ta
Se-shih-p'o
Yang-pe-ching-ssu
Ngun-ye
(Kuo-nien)
Chia-pieh
20000
N A - K H I
PE-MA SK
(PAI-MANG
Jö-mda
(Chin-ta)
Ch'i-tzu-shih
Lo-ga-ngu
Ching-k'ou
Ro-shü
(Mu-lung-shu)
Mountain hut
TE-CH'IN
(A-TUN-TZU)
(JÜL)
11500
Drong-go
Te-ch'in Ssu
(De-chhen-ling)
Dru La
12500
A-dong Lung-pa
Dza-dü
(Hsia-a-tung)
7800
Ma-pa-deng
(Ma-pa-ting)
(Hu-li)
Liu-t'ung-chiang
Jung-ma
Ssu-ts'un
Me-re-shu
(Mei-li-shu)
10100
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Dang
(Shang-a-tung or
Ta-a-tung)
Jung-p'u Ho
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Kong
Ta-shui-kou
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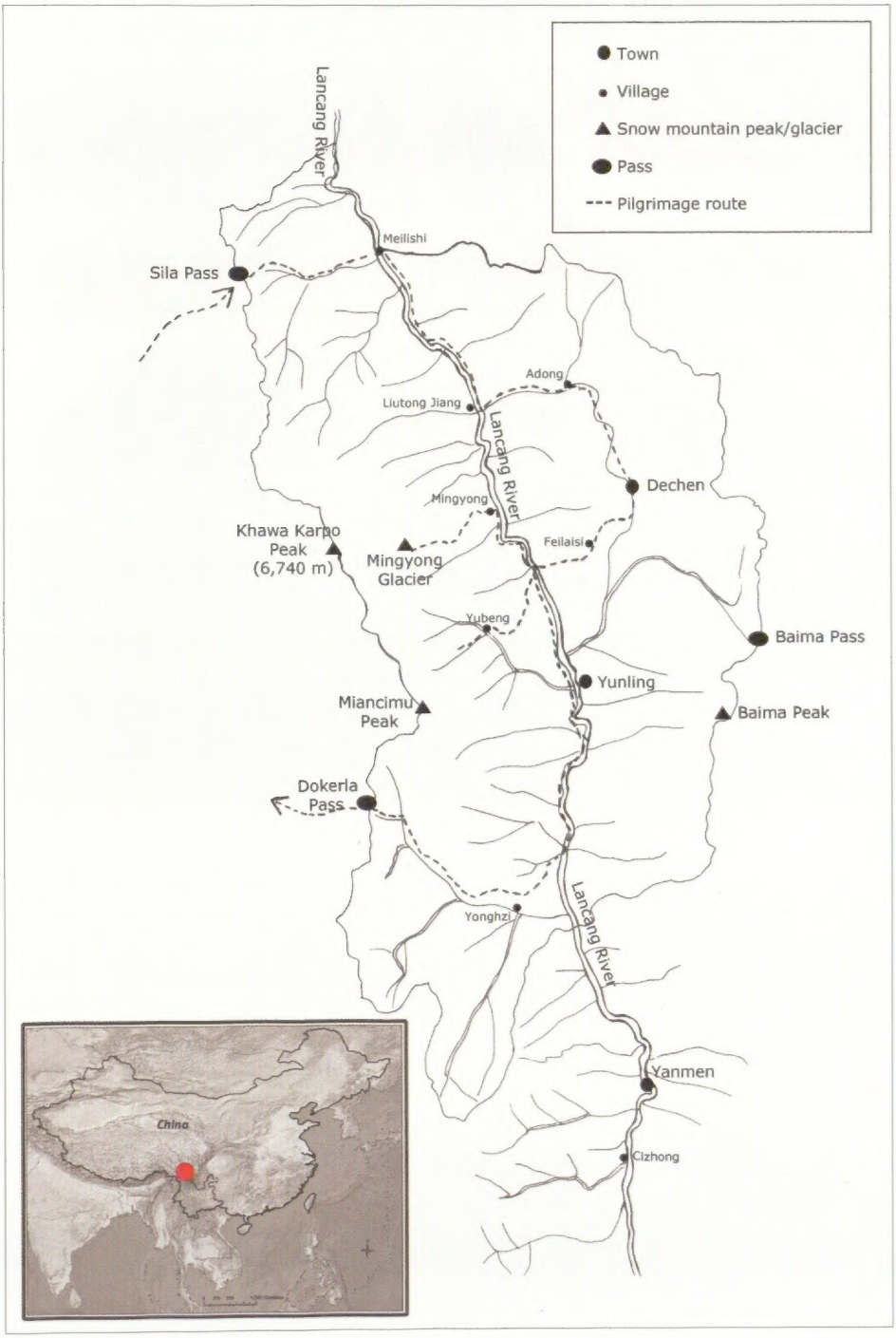

Khawa Karpo region in northwest Yunnan Province, China. Map illustrated by Barbara Alongi.

◀ Historical map of northwest Yunnan from Joseph Rock, National Geographic explorer. This is a portion of Te-ch'in (A-tun-zu), China, Sheet 1 of 4, compiled for the U.S. Army Map Service, 1946. Rock's maps of the area were based upon his original surveys of the area (1922 and 1923) and from surveys by Major H. R. Davies (1895), Captain F. M. Bailey (1911), H. Handel-Mazzetti (1914–1916), and Eric Teichman (1922).

FOREWORD

TIBETAN TRADITIONAL KNOWLEDGE AND BIODIVERSITY CONSERVATION

IN THIS RAPIDLY CHANGING WORLD, our success in building a sustainable future will depend in large part on preserving as much as possible of the biodiversity that sustains us now. Everywhere, the connection between biodiversity and human cultural diversity is close and fundamentally important. It is this strong linkage that Jan Salick and Robert Moseley explore so well in this outstanding conservation monograph.

The spectacular mountains of the eastern Himalaya are among the richest of any temperate region biologically, combining relict communities from the Tertiary Period at middle and lower elevations. Incredible evolutionary radiation events have given rise to hundreds of plant species in genera such as *Primula, Rhododendron,* and *Pedicularis* in the higher-elevation meadows, forests, and subalpine to alpine rocky landscapes. Many of our favorite garden flowers have come from this region, where they have been sought avidly for over a century by intrepid Chinese and western plant hunters.

The specific area described in this book, which lies in northwestern Yunnan Province, China, is known in the Tibetan language as Khawa Karpo, and in China and the West as the Meili Snow Mountains; the region is widely recognized for its scenic beauty and its sacred landscapes. In 2000, The Nature Conservancy, in partnership with the Yunnan provincial and Deqin county governments, launched a conservation project here, intended to encourage the preservation of both the biological diversity and the human culture of these magnificent mountains. The Missouri Botanical Garden joined The Nature Conservancy in this project so as to facilitate the incorporation of traditional Tibetan knowledge about natural resource management into the overall conservation effort. Over a period of years, Jan Salick and her team of ethnobotanists from the Garden rigorously analyzed the relationships between people and biodiversity in the area. They provided a great deal of insight that has enlightened scientists and conservationists about Tibetan management practices in this area.

Khawa Karpo: Tibetan Traditional Knowledge and Biodiversity Conservation documents these collaborative efforts, which have involved conservationists, researchers, and local Tibetans as well as non-governmental and governmental organizations. Together with his colleagues, Fang Zhendong, director of the Shangri-La Alpine Botanical Garden in northwestern Yunnan, provided a preliminary checklist of the area's plant species, an indispensible tool for the common effort. All who worked in the area as members of the international team learned a great deal about designing and implementing effective conservation practices here in an area that, until recently, was considered extremely remote, but today has become relatively accessible and therefore increasingly susceptible to change.

The traditional knowledge of indigenous people often provides important keys to understanding the ways in which people and nature can survive together in different geographies, sustaining each other on an ongoing basis. This is certainly true for the Tibetan culture, where both indigenous knowledge and tradition play important roles in management strategies. This book documents both the biodiversity of the Khawa Karpo area and the cultural traditions and traditional practices involved in its management. Together, these considerations have helped provide a unified and effective plan for regional conservation. Such a multidimensional approach, linking people and nature as an ecological whole, is increasingly seen as necessary for successful conservation and sustainable management throughout the world. Facing such challenges as climate change and infrastructural and economic expansion, Tibetans will increasingly need to depend on their traditional knowledge and their own innovations to adapt to and thus survive culturally. This fine book provides a framework for both conservation and adaptation for one particular sacred mountain in the eastern Himalaya with its resident indigenous group of Tibetans. We hope that the world can find inspiration in Khawa Karpo for applying similar principles elsewhere and for devising analogous local solutions appropriate to particular areas.

Peter H. Raven
President Emeritus
Missouri Botanical Garden

PREFACE

THROUGHOUT this monograph we use the name Khawa Karpo (pronounced as spelled here), meaning "white snow" in Tibetan, for the sacred peak and for the Tibetan warrior god. Kha-ba-dkar-po is the Wylie transliteration, which is designed to transcribe written Tibetan script. In Mandarin Chinese, four characters are used to represent phonetically the Tibetan name; this is Ka-wa-ge-bo in the pinyin romanization system, losing both meaning and pronunciation.

There is considerable confusion regarding the name of the mountain range as well. We use the Tibetan name Menri (from the Wylie system), although the word Sman-ri is used in the Wade-Giles system; both transliterations mean "mountains of medicinal herbs." The Tibetan name is used by locals in the northern portion of the range. Sometimes, however, both Tibetan Buddhist monastic and lay communities name the southern high range of glaciated peaks after the highest peak, Khawa Karpo, which is a usage that dates from at least the 14th century. Presently, the most widely used Chinese name for the range is "Meili Snow Mountains" (pinyin = mei-li-xue-shan, meaning "beautiful snow mountains") and is a Mandarin transliteration of the word Menri, but unfortunately this Chinese name loses the meaning of medicine mountains. In the 1950s, the People's Liberation Army entered Tibet through the Menri mountain range and used the transliterated name Meili for the full range. The Chinese mapping team of Yunnan Province (late 1950s) then followed the army map and perpetuated the name Meili, which has continued to the present day. Widespread tourism marketing, promoted by the local government as well as Western guidebook authors and the World Heritage Site designation, popularize "Meili Snow Mountains" as the name of these mountains to a broad audience throughout Yunnan and the world. We, however, use the Tibetan word Menri, which preserves the connotation of medicine mountains and is so important to our ethnobotanical approach to conservation.

The Nature Conservancy (TNC) and the Missouri Botanical Garden (MBG) have coordinated research, funding, organization, and infrastructure for the Khawa Karpo research and conservation program to which many individuals and institutions have contributed:

Missouri Botanical Garden – Jan Salick, Anthony Amend, Danica Anderson, Anja Byg, Bee Gunn, Robbie Hart, Wayne Law, Nanci Ross, Jessica Woo, and George Yatskievych

The Nature Conservancy – Robert Moseley, Ma Jianzhong, Ann McBride Norton, Christine Tam, Barry Baker, Ma Jian, Long Yongcheng, Tsering Norbu, and Reneé Mullen

Shangri-La Alpine Botanical Garden (SABG) – Fang Zhendong and SABG staff

Yunnan University – Ou Xiaokun, Wang Chongyun, Zhang Zhiming, Wu Yucheng, and Lu Shugang

Kunming Institute of Botany – Yang Yongping, Yang Zhewei, and Wu Sugong

Yunnan Academy of Social Sciences – Zhang Zhongyun and Guo Jing

International Snow Leopard Trust – Pricilla Allen, Bariushaa Munkhtsog, and Tom McCarthy

Kunming Institute of Zoology – Ma Shilai

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KHAWA KARPO

TIBETAN TRADITIONAL KNOWLEDGE AND BIODIVERSITY CONSERVATION

CHAPTER 1

KHAWA KARPO

SACRED MOUNTAIN AND TIBETAN GOD

Jan Salick and Robert K. Moseley

THE EASTERN HIMALAYAS—verdant, snowcapped, and glaciated—are renowned for biological and cultural diversity and endemism. Tibetan people have lived for millennia in this area, conserving, using, and managing the rich array of plant and animal life. Exceptionally high diversity and endemism in the eastern Himalayas evolved as a consequence of monsoonal rains, precipitous topography dissected by great rivers, and the interplay of major tropical and temperate floras. Tibetan culture flourished in this diversity and elaborated conservation and management practices to protect it. Outstanding among this biological and cultural diversity is an area known to Tibetans as Menri, or "Medicine Mountains" (Meili in Chinese). The highest summit in the Medicine Mountains, and among the most sacred peaks in Tibet, is Khawa Karpo. Biocultural conservation of the area surrounding Khawa Karpo is crucial, not only in the context of global biodiversity, but also for maintaining Tibetan livelihoods, beliefs, and traditions.

Culturally, Khawa Karpo is one of the most sacred mountains of Tibetan Buddhism, giving the site tremendous religious significance. Khawa Karpo is a Tibetan god accompanied by his consort Miancimu, the most beautiful peak, renowned for her blowing snow curls. Khawa Karpo and Miancimu, along with other deities, make up the chain of high, snowy peaks known as the Medicine Mountains. A steady stream of Tibetan Buddhist pilgrims circumambulate the vast peak of Khawa Karpo to gain positive karma, seek forgiveness, and give thanks. The great majority of the inhabitants of the area are Tibetan, honoring Khawa Karpo as their patron god. The sacred geography of this area is profound, protecting Tibetans and conserving the natural biodiversity. Exemplary among this biodiversity is the medicinal plant diversity that gave rise to the Tibetan name of the range.

The Khawa Karpo area is part of the Hengduan Mountains, a large, mountainous region that forms the eastern extent of the Himalayan range and the Tibetan

Buddhists from throughout the Tibetan world venerate Mt. Khawa Karpo, home of the fierce mountain god. Photograph by Robert Moseley.

Plateau. The area is prioritized within international conservation for its biocultural significance within the Southwest China Biodiversity Hotspot (<http://www.biodiversityhotspots.org/xp/Hotspots/china/>) and the Three Parallel Rivers of Yunnan World Heritage Site (<http://whc.unesco.org/en/list/1083>). With dramatic variations in climate and topography, the mountains of southwest China support areas with the most endemic-rich temperate flora in the world. The golden snub-nosed monkey (*Rhinopithecus roxellana*), giant panda (*Ailuropoda melanoleuca*), red panda (*Ailurus fulgens*), and a number of pheasants are among the threatened animal species endemic to this biodiversity hotspot—a region with a significant reservoir of biodiversity that is threatened with destruction. The Three Parallel Rivers of Yunnan World Heritage Site in the mountainous region of northwest Yunnan Province includes upper portions of three of the great rivers of Asia: the Yangtze, Mekong, and Salween. These rivers run roughly parallel, from north to south, through steep gorges and, in places, are more than 4000 m deep and bordered by glaciated peaks. The site is an epicenter of Chinese biodiversity and among the most biodiverse temperate regions of the world.

Our Khawa Karpo research and conservation program focuses on two themes, biodiversity and culture. The goal of biodiversity conservation includes long-term survival of native species and ecosystems of the area. The goal of cultural conservation is to maintain and strengthen Tibetan traditions. We attempt to weave the weft of biodiversity with the warp of traditional culture, forming a sturdy fabric

Tibetan culture and biodiversity are integrated in the Himalayan landscape. Here, the village of Yubeng with Tibetan traditional agriculture and forest management is nestled under the high peaks and surrounded by biodiverse and sacred forests. Photograph by Jan Salick.

of conservation. Until very recently, there has been a lack of critical ecological information from which to design conservation programs that integrate culture and biodiversity. Results from field investigations of the cultural and biological systems in the Khawa Karpo area and their application to conservation programs are the focus of this monograph.

SOCIAL HISTORY

Little is known about prehistoric settlement in the Khawa Karpo area. Late Stone Age archeological sites near the town of Chamdo, Tibet, contain extensive settlements from 4000–6000 B.P. These sites, 275 km north up the Lancang River (upper Mekong) from Khawa Karpo, represent an indigenous Tibetan culture that is distinct from others that occupied the Tibetan Plateau.

The historical record of the Khawa Karpo area is more detailed and illustrates a continual shifting of power among Tibetan, Chinese, and other ethnic groups: the area was ruled by military governors within the old Tibetan prefecture of Shenchuan (A.D. ~600–900), then became part of the Moerkan Frontier Command based in Mangkang, Tibet, and then part of Cizong Prefecture, based in Batang (presently in Sichuan Province). From the late 14th through the 16th centuries, the area fell under the control of non-Tibetan rulers, first the Naxi people of Lijiang under King Mu. During this period, the Kagyu sect of Buddhism was most prominent because it was favored by the Naxi. Later, a Mongolian tribe called the Heshuo conquered Tibet and helped the Gelugpa sect of Buddhism consolidate their political power. Near Khawa Karpo, the Gelugpa sect displaced the Kagyu, Nyingma, and other sects during the early 17th century, from which time the region was politically ruled by the Gelugpa theocracy in Lhasa through its local monasteries, Yangbajing, Deqinlin, and Dongzhulin. Although the eastern flanks of the Menri range and Khawa Karpo officially became part of Yunnan, China, in 1727, Chinese rule was nominal; the Tibetan theocracy still maintained the most political and economic control over the area. Following the founding of the People's Republic of China in 1949, Diqing Tibetan Autonomous Prefecture of Yunnan Province was established. Deqin County (henceforth "the county") was one of three counties created within this prefecture and included the eastern half of the Khawa Karpo area. The western half of Khawa Karpo remains within the Tibetan Autonomous Region (TAR, Tibet, or Xizang in Chinese) and is split between Nyingchi (Chinese = Linzhi) and Chamdo (Chinese = Changdu) prefectures.

East of Khawa Karpo, the town of Atunzi was the county seat. Atunzi was originally named Jūl for the Tibetan people of the region and is now named Shengping in Chinese and Dechen in Tibetan (used henceforth). Lying in a strategic position along the Yunnan–Lhasa caravan route, also known as the "Ancient Tea and Horse Road," Dechen was a cultural and economic hub connecting local Tibetan communities with central Tibet to the west and with Yunnan to the south. Although the people of Khawa Karpo are more than 90% Tibetan, scattered pockets of Han, Muslim, Naxi, and Lisu ethnic groups live throughout the region. The Han and Muslim population is mostly in Dechen, and the people are

descendents of traders who settled along the caravan route or Chinese soldiers sent to suppress Tibetan rebellions during the Qing Dynasty. Naxi people, who settled in villages scattered throughout the Lancang Valley, have inhabited the area since King Mu's control of the region in the 14th century.

The ancestral religion of the Khawa Karpo area, as in much of Tibet, was Bön, a shamanistic tradition based on the concept of a world pervaded by good and evil spirits. Bön encompassed numerous deities and spirits that are still recognized today and are often connected with specific geographical localities and natural features; the major mountain peaks in the Hengduan Mountains are thus all identified with specific deities. Locally, the inhabitants of the Khawa Karpo area regard themselves as the guardians of both the deity and of the mountain. When Bön was absorbed by Buddhism, introduced to the area from India and China in the 7th century, the result was Tibetan Buddhism, with much of its distinctive character originating from Bön. Since its introduction, Tibetan Buddhism has been the dominant religion of the Khawa Karpo area, with the Gelugpa sect being the most common. On a limited basis, the Naxi Dongba religion and Catholicism were introduced later and are still practiced in some places.

Agro-pastoralism is still the dominant lifestyle in the Khawa Karpo region. Since 1949, reforms instituted by the People's Republic of China shifted political and economic power, including land ownership, away from local landlords and monasteries to the government. After collective farming was abolished in the late 1970s, household farms and communal pastures and forests have provided for Tibetan livelihoods near Khawa Karpo. Traditional Tibetan family structures, including extended patrilineal assemblages with polyandry (a woman who marries the eldest son of a family also marries the brothers, with children referring to all brothers as father; this system obviates the need to subdivide family lands) are giving way to the Chinese one child, nuclear families (minority cultures are allowed two children per nuclear family but are discouraged from having more than one). Although land tenure is changing in China, land for household farms is available in northwestern Yunnan and Tibet on "long-term lease" from the government, with tenure inherited within the family and no sale allowed. As elsewhere in Tibet, yaks and other domestic animals are culturally and economically important in the Khawa Karpo region.

Highland varieties of barley, wheat, maize, buckwheat, walnuts, apples, pomegranates, and peaches are the main subsistence crops with some sale. Collection of mushrooms and medicinal plants in the local forests and alpine communities augments the household economy. Previous to government bans, other activities such as logging and hunting were important. The remoteness of the region has been a major disadvantage for agricultural marketing. Since the 1980s the central government has promoted road construction, electrification, communication, and other infrastructure, creating major changes. Furthermore, with national

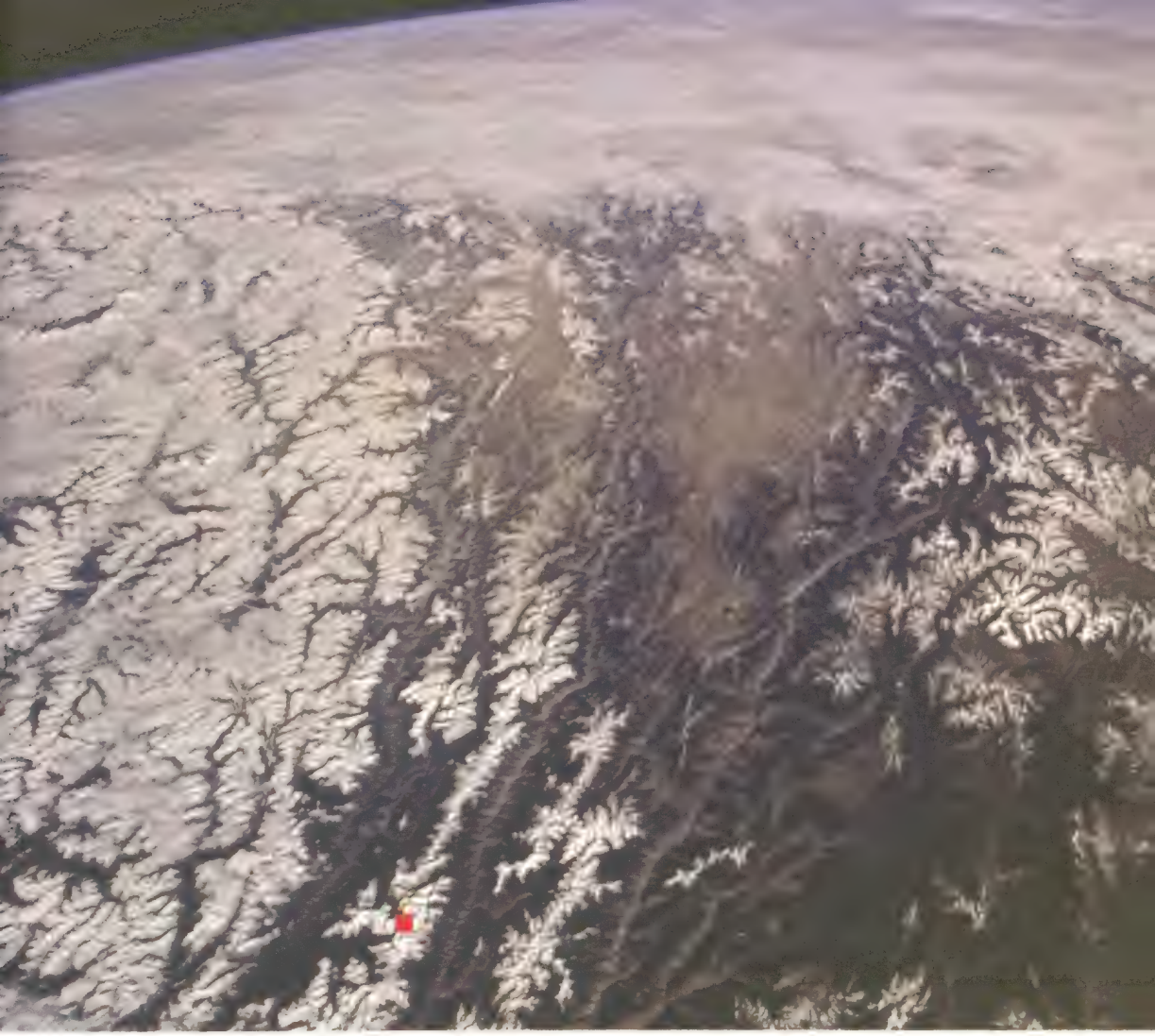
Agro-pastoralism still dominates the Khawa Karpo area. Barley is a dominant crop in villages of the region. Photograph by Jan Salick.

and global economic and cultural influences, the traditional Tibetan lifestyle is changing quickly.

NATURAL HISTORY

Outstanding on any map of the world, and at any scale, the physiography of the Hengduan Mountains of northwestern Yunnan is unique. Not only are they the eastern extent of the Himalayas, the world's tallest mountain range, but they are also traversed by four of Asia's great rivers: the Jinsha (upper Yangtze), Lancang (upper Mekong), Nu (upper Salween), and Dulong (upper Irrawaddy). All originate in different areas of the Tibetan Plateau and then converge in the Hengduan Mountains, cutting deep, parallel gorges as they slide off the eastern end of the plateau. At their closest point, these rivers flow within 90 km of each other, before radically diverging and flowing into different seas and oceans.

The region's climate is dominated by monsoons with summer rains and winter droughts. Monsoonal storm systems from the Indian Ocean encounter mountain ranges, forcing clouds into colder altitudes that produce rain and also rain shadows behind the peaks. Locally, including near Khawa Karpo, these climatic and physiographic characteristics cause the high peaks and ridges to receive most of



The Nu, Lancang, and Jinsha rivers run through deep gorges of northwestern Yunnan and are prominent features of the Earth's surface. Khawa Karpo Peak (red square) lies between the Nu and Lancang rivers. Photograph courtesy of Image Science and Analysis Laboratory, NASA-Johnson Space Center, 2000.

the precipitation and cloud cover, leaving the deep valleys and gorges east of the mountains with little precipitation and an arid environment.

In addition to this complex physical setting, the Hengduan Mountains also occupy a complex biogeographical position. The area straddles one of the world's major biological transition zones from alpine and temperate systems of the Tibetan Plateau and northern China to the subtropical and tropical realms of Southeast Asia. A unique combination of factors, including physical relief, hydrology, rainfall patterns, biogeography, and other factors, create the most biologically diverse temperate ecosystem on Earth. It is this extraordinary biodiversity that initially drew

the attention of The Nature Conservancy and the Missouri Botanical Garden to the region. The plant and animal life of the Hengduan Mountains is exceptional. Charismatic animals include snow leopards (*Uncia uncia*), pandas, both giant (*Ailuropoda melanoleuca*) and red (*Ailurus fulgens*), blue sheep (bharal) (*Pseudois nayaur*), and spectacular pheasants (e.g., Lady Amherst's pheasant [*Chrysolophus amherstiae*]. Endemic plants comprise snow lotus (e.g., *Saussurea laniceps* and *S. medusa*), blue poppies (e.g., *Meconopsis impedita* and *M. lancifolia*), corydalis (e.g., *Corydalis bimaculata*), and many other genera. Wild relatives of garden plants originating in the area are peonies (*Paeonia*), hydrangeas (*Hydrangea*), lilacs (*Syringa*), rhododendrons (*Rhododendron*), and primulas (*Primula*). Mammoth spruce (*Picea*) and fir (*Abies*) of the Hengduan Mountains comprise some of the oldest growth forests in the world. Even mythical Tibetan creatures, like the enormous yet sympathetic Yeti, have caught the imagination of the world.

At Khawa Karpo, physical and biological factors combine to create an extraordinary landscape. Topographical extremes are immense, with vertical relief ranging from less than 2000 m along the Lancang River (upper Mekong River) to 6740 m on the summit of Khawa Karpo within 10 km horizontal distance. Coincident with this extreme topographical gradient is a similarly steep environmental gradient. Compressed within this short distance are subtropical scrub vegetation (hot temperate shrublands) along the arid canyon bottoms that transition with elevation to sclerophyllous broadleaf forests, humid mixed needle and broadleaf forests, cold temperate needleleaf forests, alpine meadows, and scree above the treeline, topped eventually by permanent snow on the high peaks. The Mingyong Glacier, descending from the summit of Khawa Karpo, terminates at a low elevation just before the subtropical life zone. Although climate data for Khawa Karpo are incomplete, annual precipitation is estimated to range from 300 to 950 mm, and mean annual temperatures vary from –9°C on the glaciated peaks to 5°C in the valley bottoms.

HISTORY OF SCIENTIFIC EXPLORATION AND INVESTIGATION

Western scientific exploration of the Khawa Karpo area was initiated by traders and Catholic missionaries in the 1850s. French priests collected botanical and zoological specimens and sold them to the Muséum National d'Histoire Naturelle, Paris, to raise money for their mission. In 1877, the British explorer William Gill made some plant collections in the Khawa Karpo area. In 1894–1895, Prince Henri d'Orleans, an adventurer looking to extend French trade and political influence beyond Indochina, collected botanical specimens near Khawa Karpo on his way from Dali to northern Burma and Assam, India. The British, also wanting to extend their political and commercial influence beyond India, Burma, and eastern China, sent geographers in 1894–1901 to map and explore possible railroad

Among the most rugged places on Earth, the Mingyong Glacier snakes down the slopes of Khawa Karpo toward the Lancang River (just out of view in the canyon). The vertical relief from peak to river is over 4700 m and encompasses subtropical, temperate, and alpine life zones. Mingyong village is nestled in the valley below the glacier. Photograph by Robert Moseley.

routes between India and Chongqing, China. These geographers, led by Henry Davies who traveled through the Khawa Karpo region in 1900, produced a map that became the standard reference for Yunnan for several decades.

Botanical exploration began seriously in 1905 with the arrival of George Forrest from Scotland. Forrest was a commercial plant hunter employed by horticulturists in Britain to bring back exciting new discoveries for English gardens. Forrest mounted seven expeditions to Yunnan between 1905 and 1932, including many near Khawa Karpo, collecting both horticultural plants and an enormous number of scientific collections from which many new plant species were described. Frank Kingdon-Ward was another British commercial plant hunter and rival of Forrest. He conducted the most thorough botanical exploration of Khawa Karpo of any of the early western explorers, spending many months in the area and using Dechen as his base of operations for three expeditions in 1911, 1913, and 1922. He made many important horticultural discoveries and scientific collections and left the most extensive written record of early 20th century Khawa Karpo. Heinrich Handel-Mazzetti, an Austrian, also made significant collections from the area. Unlike his predecessors, Handel-Mazzetti was an academic botanist from the University of Vienna interested in more than just the horticultural flora. He made two trips to the southern part of Khawa Karpo in 1915 and 1916. Another Austrian botanist, Anton K. Gebauer, collected botanical specimens in the area in 1914. Both Handel-Mazzetti and Gebauer were in Yunnan when World War I started and were interned by the British for the entire war, Handel-Mazzetti in China and Gebauer in India. Miraculously, all their botanical collections eventually made it back to Austria following the war.

During the 1920s, three western scientists skirted the base of Khawa Karpo. In 1921, Swedish botanist Harry Smith began his 15-year career of China collecting trips by visiting the area. In 1922, the famous British geologist John Walter Gregory visited the area, which he called the "Alps of Chinese Tibet." The American botanist and ethnographer Joseph Rock spent October and November 1923 traveling near Khawa Karpo, documenting the physical, cultural, and biological features of the area. Of all early explorers, Rock left the most significant photographic record of the Khawa Karpo area. Tens of thousands of botanical collections from all these explorers remain important today as botanists from around the world collaborate on the *Flora of China*.

Although several other Westerners traveled through the Khawa Karpo area during the first half of the 20th century documenting landscapes and cultures, no botanical specimens were collected. The French Tibetologist Jacques Bacot explored the area on an extended expedition during 1907, including traveling with pilgrims on their circumambulation of Khawa Karpo. Marion Herbert Dun-

Self-portrait of Joseph Rock near the village of Yongzhi on his 1923 expedition to Khawa Karpo. Rock stands next to piles of sacred stones inscribed with prayers, especially *om mani padme hum*, the Tibetan invocation for the salvation of all living creatures. Reproduced with permission from National Geographic Stock, Dr. Joseph F. Rock. ▶

◄ The *Rhododendron wardii* was discovered in the forests above Dechen by Frank Kingdon-Ward, the most prolific plant collector and explorer of the Khawa Karpo region. Photograph by Robert Moseley.

can, an American Protestant missionary, wrote *The Mountain of Silver Snow* (referring to Khawa Karpo) based on his travels through the area between 1921 and 1927. During 1923, the intrepid Frenchwoman Alexandra David-Néel, disguised as a Tibetan pilgrim, traveled through the area on a clandestine trek to Lhasa, which at that time was closed to westerners. Finally, H. Gordon Thompson, a British medical missionary, made a quick trip up the Lancang River valley in 1924.

Scientific exploration of Khawa Karpo by the Chinese, most of which was botanical, began in the 1930s. In 1935, the famous Chinese botanist Wang Qiwu (plant taxonomist and ecologist, Fan Memorial Institute of Biology, Beijing) collected plant specimens on both the east and west sides of the Khawa Karpo range and described its vegetation ecology. At the beginning of World War II (1937–1938), the Fan Memorial Institute sponsored two more botanical expeditions to Khawa Karpo, this time led by Yu Dejun (National University, Beijing), that were reported to have collected 40 mule-loads of plant specimens. During the expedition, the Japanese invaded eastern China, forcing the botanists to take refuge at the Kunming Institute of Botany where their specimens were deposited.

Following the founding of the People's Republic of China in 1949, two scientific expeditions passed through the Khawa Karpo region before the Cultural Revolution (1966–1976). In August 1956, botanist Mao Pinyi of the Kunming Institute of Botany crossed the range collecting plant specimens. In 1960, the government launched a general natural resource assessment of the Nu and Lancang river valleys, including Khawa Karpo. Wu Sugong (Kunming Institute of Botany), the botanical team leader of that assessment, was not able to return to Khawa Karpo until 1981, after the Cultural Revolution, as botany leader for the "Comprehensive Scientific Expedition to the Hengduan Mountains" (Chinese Academy of Sciences). During 1986–1995, the flora of Khawa Karpo was investigated by Zhu Weiming and colleagues from Yunnan University. Between 1995 and 2000, there were sporadic collections and observations made of plants and animals. Comprehensive biological research and inventories near Khawa Karpo were begun in 2000 by the Missouri Botanical Garden and The Nature Conservancy in collaboration with the Kunming Institutes of Botany and Zoology, Yunnan University, International Snow Leopard Trust, and Shangri-La Alpine Botanical Garden and are ongoing.

CHANGE

In contrast with the predominant Western image of Tibet as a remote and secluded area, Tibetans have an extensive history of contact with the outside world. This also holds true for the Khawa Karpo area. For centuries, Tibetan caravans with tea and other goods from southern China and Southeast Asia came up the Lancang River past Khawa Karpo along the Ancient Tea and Horse Road. Also, Khawa

Karpo has attracted pilgrims from throughout the Tibetan world for centuries as one of the most sacred mountains. In addition, Khawa Karpo's position in the Tibetan borderlands has meant that political control of the area has shifted among different ethnic groups throughout history, bringing diverse external influences.

In more recent history, Dechen had an important role as a commercial distribution center of non-timber products for markets in eastern China and even Europe, including medicines like *chong cao* (*Ophiocordyceps sinensis* [formerly *Cordyceps sinensis*]) and *bei mu* (*Fritillaria cirrhosa*), and the glands of musk deer (*Moschus* spp.), which is much sought after in the manufacture of perfumes. In the late 19th century, French Catholic and other missionaries arrived in the area, and although disliked by the Tibetan lamas, these missionaries initiated European influences. Chinese governance of Tibet after 1951 had tremendous effects on Tibetans, inside and outside the borders of Tibet.

Although these many outside influences have brought continuous change to this seemingly remote mountain area, the pace of change has recently accelerated dramatically with vast impacts on both culture and biology. Most of these changes are connected to regional, national, and international policies and economic developments. A current frenzy of economic development capitalizes on the natural and cultural resources of the Khawa Karpo area. Tourism is expanding most rapidly, but development of mining, non-timber products, and agricultural products is also increasing. The central government recently launched a long-term plan to bring underdeveloped areas of western China into economic parity with eastern China. In the Khawa Karpo area, development has recently resulted in rapid construction of new roads, with many other infrastructure projects planned.

Threats to biodiversity are evident—snow leopards, other large cats, and ungulates are endangered; several rare and endemic plants are threatened; and many plants harvested for medicine and horticulture have rapidly declining populations. These losses of biodiversity are driven by poverty, government policy, and infrastructural development and are exacerbated by tourism and expanding national and international markets.

Faced with serious challenges and uncertainties, traditional Tibetan culture is also under stress. The influx of Chinese authority and Western culture exert a strong influence on traditional Tibetan consciousness, lifestyle, and values. Migration from rural to urban areas is affecting social structure by disrupting traditional Tibetan family, village, and migrational patterns. Since the Cultural Revolution there has been erosion of religious beliefs and practices, which is especially obvious among the younger generation. Tibetan cultural artifacts and literature were also lost during the Cultural Revolution. There is no provision for Tibetan language education. As a result of these religious, cultural, and linguistic transformations, there is a disruption in the transmission of Tibetan culture and

language, with serious implications for a sustainable future. The deterioration of traditional ecological knowledge on which biodiversity must depend threatens conservation of biological and cultural diversity—our major goal.

The dramatic sociopolitical change experienced near Khawa Karpo over the last half-century is expected to further accelerate in the near future. Recognizing that no culture is static, how will the impoverished Tibetans of Khawa Karpo assimilate and adapt to the sudden onslaught of tourism, development, and expanding infrastructure without losing their cultural identity or traditional livelihoods? How can nature conservation be prioritized and effectively implemented? And, can culture and nature near Khawa Karpo continue to reciprocally support and sustain one another, as they have for millennia?

CONSERVATION BY DESIGN: THE NATURE CONSERVANCY APPROACH

In the face of high conservation value and an urgent need for action in the Khawa Karpo area, there is the risk of acting without sufficient knowledge of biodiversity, human impacts, and the sociocultural context. A balance must be struck between the lack of knowledge and the need for action. On the one hand, we cannot assume that any action is better than none, but because of the urgency, research and planning can not paralyze action. This calls for a science-based approach, whereby the results of biological and social research are used in a systematic way when making decisions. Uncertainty in conservation can be minimized with these guidelines: (1) develop thoughtful strategic plans that incorporate all pertinent information and an objective approach for evaluating success; (2) assure objectivity and accuracy through frequent use of peer reviewers to evaluate priorities, strategies, and methods; (3) adjust conservation actions and management as more knowledge is gained; and (4) share information and experiences openly. In other words, conservationists must plan, act, learn, adapt, and communicate in a dynamic and continuous manner.

In 1999, the Yunnan Great Rivers Project (YGRP) was collaboratively established between the Yunnan provincial government and The Nature Conservancy in 15 counties of northwestern Yunnan. All global analyses have identified the mountains of southwestern China, including northwestern Yunnan, as a conservation priority because of their rich biodiversity. The initial challenge for us was figuring out how to transform this sweeping global recognition into regional, geographical priorities and measurable conservation action. We began by conducting broad-scale assessments of cultural biodiversity and threat patterns in order to identify conservation priorities. This effort included more than 90 Chinese experts from nearly 40 institutions and organizations. One of the outcomes of this assessment was a map of geographical priorities—a network of conservation

areas that included the highest quality sites for biodiversity. Although we believe that some level of conservation is needed for the entire network, we realize that it is too large to do all at once. Conservation investment needs to be staged, with high priority sites chosen based on such criteria as feasibility of success, opportunities for conservation, biodiversity values, and threats.

Khawa Karpo was one of the five priority sites chosen for immediate action by The Nature Conservancy because the biodiversity value was known to be high, the county was an enthusiastic partner, there was great opportunity in the inherent conservation ethic of Tibetan culture, and there was great urgency due to threats of poverty and the impending boom in economic and infrastructure development. The county and The Nature Conservancy launched the Khawa Karpo project at an international conference in 2000 and formalized the relationship in 2001 by signing a cooperative agreement. This cooperation was based on the following two principles: (1) the biodiversity and cultural values of the Khawa Karpo area are of global significance, and (2) conservation of biodiversity and culture is necessary for sustainable economic development. This agreement, which was updated in 2004, set the stage for cultural and biological inventories, applied research, systematic conservation planning, and the design and implementation of strategic conservation actions in the Khawa Karpo area.

TIBETAN ETHNOBOTANY AND CONSERVATION: THE MISSOURI BOTANICAL GARDEN APPROACH

Ethnobotany—the study of plants, people, and their environments—is employed to document the biocultural diversity of Khawa Karpo, traditional Tibetan ecological knowledge, and indigenous methods of conservation and natural resource management. Tibetans use native plants in every aspect of their lives, including food, medicine, fiber, construction materials, and much more. From the mundane to the sacred and from subsistence to ceremony, plants are an integral part of Tibetan life. Conservation and management of plants and biodiversity are equally integrated in Tibetan culture. For example, sacred geography protects natural resources from large areas to individual trees; through sanctification, a mountainside or an ancient tree may be protected from grazing or logging. One Tibetan doctor from Khawa Karpo explained that sacred areas, among their other cultural and religious powers, protect populations of medicinal plants to ensure reproduction and sustainable harvests. How can we reinforce these indigenous traditions in conservation?

Nature conservation can learn from and reinforce indigenous Tibetan practices at all scales, from plant populations to landscapes. Tibetan land management is especially relevant to conservation. Supporting indigenous plant management

is crucial to the conservation of biodiversity near Khawa Karpo. Tibetans have been successful stewards of this plant diversity for millennia. However, modern pressures brought by policy, infrastructure, tourism, and markets are threatening traditional land stewardship and, in the process, threatening the plants themselves. Tibetan ethnobotany was used to study indigenous systems of Tibetan land and plant management to reinforce conservation components and to empower the people to defend their resources and manage them for a sustainable future.

Ethnobotany increasingly guides conservation and sustainable development to incorporate traditional ecological knowledge—the adaptive ecological knowledge developed through an intimate reciprocal relationship between a group of people and a particular place over time.

For conservation and sustainable development to succeed, grassroots support and initiatives must be integrated with policy. Indigenous and local people must be the foundation and the initiators of conservation and sustainable development for effective implementation. Ethnobotany provides processes through which local people, professionals, academics, policy implementers, and policymakers can be drawn together and empowered to achieve conservation and sustainable development.

Therefore, the Missouri Botanical Garden in collaboration with The Nature Conservancy is incorporating traditional knowledge with scientific methods to develop conservation recommendations and procedures to protect Khawa Karpo. Cooperation among institutions and with Tibetan doctors and local citizens has been overwhelmingly positive. Additionally, we developed an ethnobotany education program that included ethnobotanists, conservationists, and local people of Khawa Karpo to increase awareness and knowledge of biocultural diversity and management. In turn, we hope that this will increase their understanding of and, therefore, the success of our research and conservation efforts. The success of our efforts near Khawa Karpo will ultimately depend on government and local people working together toward the long-term conservation management of agrobiodiversity, non-timber products, specific habitats, full landscapes, biocultural diversity, and climate change. These conservation goals are of amplified significance and consequence in the larger context of the Hengduan Mountains, a biodiversity hotspot and one of the most biologically diverse temperate ecosystems on earth. Simultaneously, the eastern Himalayas are experiencing some of the most rapid climate change on Earth, beyond that of the poles. We hope that conservation of Khawa Karpo with Tibetan people, based on their needs, uses, and management of biodiversity, can act locally to address these global challenges facing our one small planet.

CHAPTER 2

KHAWA KARPO CONSERVATION RESEARCH

Jan Salick and Robert K. Moseley

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TIBETAN INDIGENOUS KNOWLEDGE NEAR KHAWA KARPO

How do Tibetans view Khawa Karpo? How do Tibetans understand, use, and manage natural resources of the area? How do Tibetans perceive climate change? Several lines of research incorporate Tibetan indigenous knowledge, such as Tibetan's views of their environment, natural resources, and management. We begin with this partially out of respect for Tibetan culture and knowledge, and partially to distinguish our approach of maintaining and strengthening Tibetan traditions that embody conservation from more standard nature conservation. In this section, we present results from our studies of Tibetan medicine, sacred sites, land use, and climate change. We also briefly discuss photovoice and participatory rural appraisal, methods used to incorporate the knowledge and opinions of Tibetans in planning and implementing conservation of the Khawa Karpo area. Many of the research topics overlap greatly as we interweave indigenous knowledge of biodiversity and culture to form the material of conservation.

TIBETAN MEDICINE

Tibetan medicine is inextricably linked with Tibetan Buddhism. It also contains many non-Buddhist elements that have been subsumed into a Buddhist framework and combined in novel ways. Most obviously, Tibetan medicine combines

the Indian Ayurvedic concept of humours with Buddhist concepts of fundamental vices in order to understand and treat disease. In addition to the influence of Indian Ayurvedic concepts, Tibetan medicine has drawn on western and Chinese theories and practices as well as pre-Buddhist Tibetan shamanic practices, including Bön. Tibetan kings in the 7th and 8th centuries had personal physicians from as far away as the Middle East and Greece. They not only attended to the king's health, but also translated medical texts and established their own medical schools. In the 12th century, a famous Tibetan physician, Vairotsana, collected and systematized Tibetan medicinal knowledge in a Buddhist theoretical framework. His four-volume work became known as *The Four Tantras*. Together with later commentaries, the Tantras are still regarded as the foundation and central core of Tibetan medicine.

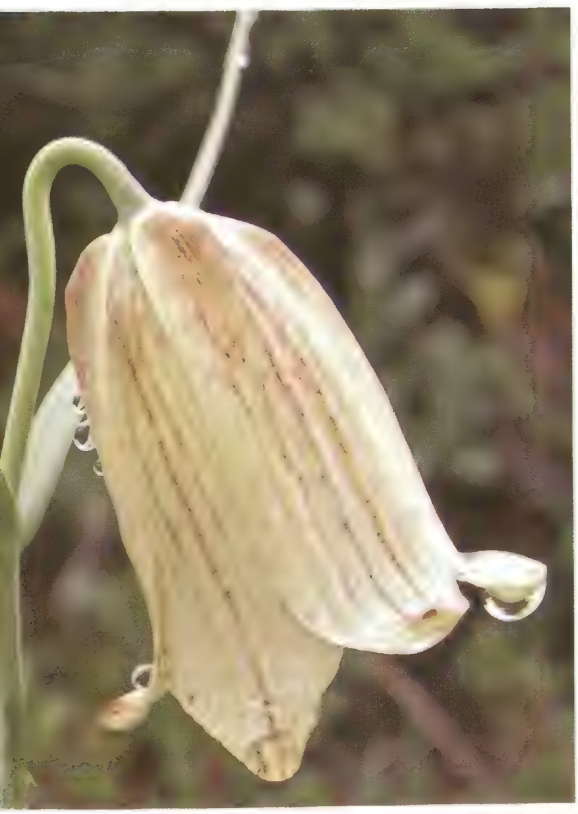
In Tibetan medicine the three humours of wind, bile, and phlegm circulate through the human body. The seven bodily sustainers of nutrients, blood, muscle tissues, fat, bone, marrow, and regenerative fluid maintain the body, and the three bodily eliminators of urine, feces, and perspiration eliminate harmful elements. There is also a large array of harmful spirits. Disease arises when the balance among humours, sustainers, and eliminators is disturbed and/or when harmful spirits invade the body. The ultimate causes for disturbance are the three spiritual poisons, or vices, of attachment, aversion, and delusion. External circumstances, too, such as diet, climate, and lifestyle, are responsible for triggering physical manifestations of imbalance. Every disease has thus spiritual causes as well as more immediate physical causes. Disease should therefore be treated by attending to both proximate (physical) and ultimate (spiritual) causes. Treatment depends on the severity of the disease and can include or combine changes in diet, lifestyle, medications, mechanical (e.g., massage, acupuncture, moxibustion, surgery) treatments, and religious ceremonies. Tibetan medicine uses physical examination to diagnose disease, and involves taking pulse, examining urine, and questioning patients and their families.

Despite its generally accepted medical and spiritual basis as outlined in the Tantras, Tibetan medicine has been characterized by different schools of practice throughout its history. In addition to monk-physicians educated in monasteries, there were also many secular Tibetan doctors, pharmacists, herbalists, and local healers, with the latter often using pre-Buddhist shamanic practices.

In the beginning of the 20th century, the 13th Dalai Lama attempted to reform Tibetan medical institutions and to make health care more widely available by establishing a government-run medical school. During the Chinese Cultural Revolution in the 1960s and 1970s, Tibetan medicine was generally denounced as feudalistic superstition. With political reforms in the 1980s Tibetan medicine was rehabilitated without the religious component and, as such, is now officially regarded as an important (and cheap) supplement to biomedical health care. The former plurality of practices, however, has been replaced by a more centralized

◀ Snow lotus (*Saussurea laniceps*). Photograph by Wayne Law.

▼ White snow tea is made from the dried alpine lichen *Thamnolia vermicularis* and used as a lichen tea for its medicinal properties. Photograph by Jan Salick.



Fritillary (*Fritillaria cirrhosa*). Photograph by Robert Moseley.

Caterpillar fungus (*Ophiocordyceps sinensis* [formerly *Cordyceps sinensis*]). Photograph by Jan Salick.

and homogenized system. Government medical schools in Lhasa now train the only officially recognized Tibetan doctors. Ancient medical texts such as *The Four Tantras* can still be used in teaching. However, spiritual aspects of the interpretation and treatment of disease have been replaced by a more materialistic approach that is influenced by the biomedical system.

Tibetan medicine is also influenced by its increasing popularity within and outside of China. The increasing demand for Tibetan medical treatment and medicine has led to the establishment of Tibetan clinics, medicine markets, and factories, and to increasing prices. Tibetan medical schools and clinics have opened worldwide.

Powerful groups such as the state, the World Health Organization, and commercial companies generally regard variation as a hindrance to regulating and controlling the quality of traditional medical treatments and medicines. However, variation in Tibetan medicine has been characteristic throughout its history, allowing both adaptations to local needs and viability for more than a thousand years. There is a great deal of both indigenous and local knowledge embedded in the plurality of Tibetan medical traditions.

Relevantly, knowledge of Tibetan medicine is limited in the general population. Participatory rural appraisal of medicinal plant knowledge suggested that the highly structured and hierarchical traditions of Tibetan medicine discourage transmission of this indigenous knowledge to ordinary people. Tibetan people have little access to knowledge of Tibetan medicine, which requires long periods of study and training. Tibetan villagers recognized less than half of local Tibetan medicinal plants and only a quarter were identified as having medicinal uses; villagers' usage of medicinal plants often differed from official Tibetan medical usage. The medicinal knowledge of the Tibetan populace is centered on medicinal plants with market value, including snow lotus (*Saussurea laniceps*); white snow tea, which is made from the dried alpine lichen *Thamnolia vermicularis*; fritillary (*Fritillaria cirrhosa* and *F. delavayi*); and caterpillar fungus (*Ophiocordyceps sinensis* [formerly *Cordyceps sinensis*]). Age was not a factor in plant knowledge, but men tended to know more plants than women, possibly because of their greater participation in high alpine herding and in market economy. For illness, Tibetan villagers go to Tibetan, Chinese, and/or Western doctors and take prescribed medicines. Thus, since traditional medical knowledge is not distributed widely in the culture, it is important to maintain the current plurality in Tibetan medicine that includes the acceptance of a variety of practices.

SACRED GEOGRAPHY

Khawa Karpo is one of the most sacred Tibetan mountains and has been revered for more than 1000 years, first by followers of the pre-Buddhist Bön religion and later by Buddhists. Each year thousands of people from throughout the Tibetan

world visit Khawa Karpo to perform pilgrimages, thereby accumulating positive karma or merit for their rebirth into future lives. Records of Bön worship of the mountain have been lost, but the sacredness of Khawa Karpo to Buddhists dates back more than 700 years when important leaders of the Gamaba sect of Tibetan Buddhism visited the site and established Khawa Karpo as an important site for mediation and tantric rituals. Many of the mountain's more prominent sacred sites were established at this time, as well as the inner and outer pilgrimage routes around the mountain.

For local Tibetans, the power of Khawa Karpo occupies their everyday lives as a major influence. Each morning families light rooftop offerings of incense cedar boughs, adding barley seed and water to secure fertility, prosperity, and blessings. In 1991, when a Japanese team attempted to climb Khawa Karpo, all were killed in a major avalanche, confirming local beliefs in the mountain's omnipotence; similarly, several World War II planes flying the "Hump," or wartime supply route over Khawa Karpo, crashed in northwest Yunnan with very high mortality rates. If the sacred landscape of Khawa Karpo is violated in any way, local people believe that they will suffer the consequences of disease, natural disaster, or other deleterious events.

This ancient spiritual tradition created and supports a sacred geography that has direct implications for biodiversity conservation. In order to document this spiritual landscape and to integrate traditional knowledge of sacred space with modern understanding of biodiversity, we mapped the sacred geography of Khawa Karpo. This was a multidisciplinary effort that included conservation biologists, ethnobotanists, ethnographers, villagers, and local religious leaders.

First, we recognized that there are four tiers of sacredness. The first and highest level, which is Khawa Karpo itself, is venerated by all Tibetan Buddhists. The second level consists of areas or sites that are regionally important and worshiped by multiple communities. The third type of site is sacred only to a single village; typically, local villagers request an incarnate lama to visit their village and designate certain areas for special purposes and establish strict rules for their use, although occasionally sacred sites are established by village leaders. The last type is the clan or family sacred site or object. The last three types of sacred areas or objects are venerated by specific groups of people, such as people within a region, village, or clan, with no special recognition from people outside of the group. Secondly, we mapped the location and religious value of the four sacred geographical elements: sacred mountains, rigua, diverse sacred sites, and pilgrimage routes.

Sacred mountains (*rida* in Tibetan) are the main natural sacred sites. At the highest level of sanctity, all Tibetan Buddhists venerate Khawa Karpo itself. The second level consists of 30 mountains that are regionally important and worshiped by multiple communities. At the third level, there are more than 40 additional peaks sacred to a single village.

Mt. Khawa Karpo is a sacred peak revered throughout the Tibetan world and circumambulated by countless pilgrims from distant realms. Photograph by Jan Salick.

Sacred grove of *Cupressus duclouxiana* near Bucun village. Photograph by Robert Moseley.

The doctor from Yubeng village giving a prayer of thanks for being able to collect medicinal plants in the alpine zone. Photograph by Robert Moseley.

Pilgrims from the Tibetan Plateau on a circumambulation of Khawa Karpo, pictured here below the sacred Dokela Pass. Photograph by Renée Mullen.

Rigua (or *ri-vgag* or *ri bkag*) is the traditional zoning system of Tibetan Buddhists defining geographic boundaries of sacred space. Maintenance of this system over centuries requires ongoing interaction between villagers and religious leaders. To date, survey teams have identified 25 *rigua* zones in the Khawa Karpo area.

Diverse sacred sites, such as groves, lakes, waterfalls, forests, and grasslands, associated with sacred places are another form of natural sacred sites. There are 10 monasteries and temples erected on sacred sites in the Khawa Karpo region by the Gelugpa, Kagyupa, and Nyingmapa sects of Tibetan Buddhism, and there are more than 300 sacred landmarks, such as single prayer sites, trees, rocks, or springs. Areas surrounding these landmarks are endowed with cultural significance and are given the same degree of protection as larger, natural sacred sites. Families and clans are most often associated with sacred trees, rocks, and small areas that are guarded and kept secret from outsiders.

Pilgrimage routes are considered sacred, as well as hundreds of sites found along the way. Because of its great power, circumambulation of Khawa Karpo bestows much karma, universally sought by Tibetan Buddhists. For Tibetans, the circumambulation by foot takes 8–10 days and crosses from the Lancang River, over the high pass Dokerla to the Nujiang River, and then back to the Lancang Valley over an even higher pass, Sila. There is also a shorter, "inner" pilgrimage route on the Lancang side of the range that includes two main sacred places, the sacred waterfall from the glaciers above Yubeng village and the Mingyong Glacier descending from the summit of Khawa Karpo.

Critically, sacred geography relies on Tibetan cultural and religious systems for enforcement (see Sacred Space, this chapter). Therefore, effective partnering between sanctity and conservation depends heavily on maintaining the cultural identity and traditions of local Tibetans, as well as recognizing and incorporating Tibetan's cosmological view of sacred areas with conservation's more pragmatic purposes. This is a new role for conservation but one that is crucial in Tibet.

TIBETAN LAND USE

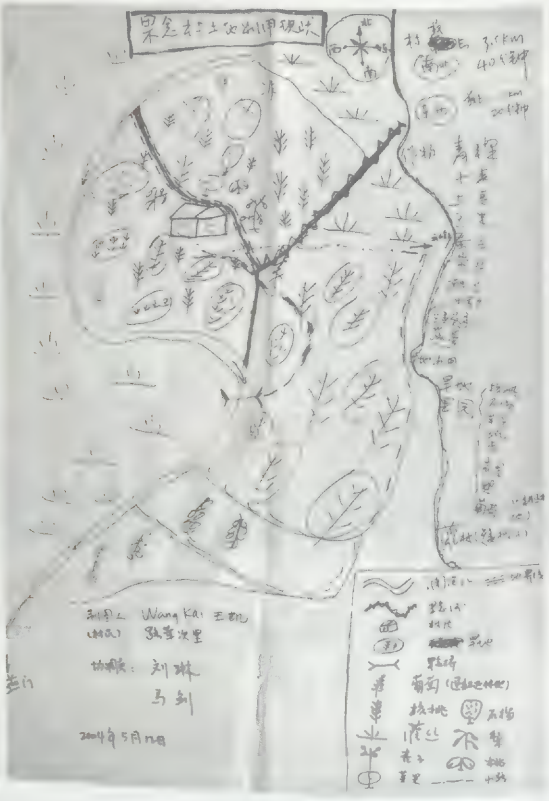
For Westerners, "Tibetan land use" brings to mind visions of nomad pastoralism on the high plateau. In contrast, the well-watered, monsoonal region around Khawa Karpo supports agriculture, animal husbandry, forestry, and gathering as important traditional activities central to Tibetan livelihoods. Tibetan farming practices are little studied, and gathering practices are even more obscure. A study was conducted to understand these practices and to determine how they are affected by elevation and road access, two variables of particular importance.

Six ethnic Tibetan villages were selected for this study based on elevation (two at elevations higher than 3000 m and four at elevations lower than 2500 m) and access to roads (three with roads and three with only distant access). While roads facilitate transportation to Dechen, the principal market town in the area, none are

completely paved, and frequent landslides block traffic. Without roads, villagers rely on their backs, porters, horses, mules, and yaks to transport goods by trail.

Field research was conducted within six villages by three teams, with each team consisting of a botanist, a geographic information systems (GIS) technician, a participatory rural appraisal (PRA) facilitator, two Chinese graduate students, two Tibetan doctors, two village participants (one man and one woman), and one trilingual translator. The teams spent five days each in two villages.

Participatory rural appraisal mapping was popular among numerous local Tibetan villagers, who sketched their villages on large sheets of paper, highlighting major landmarks (mountains, rivers, sacred sites, roads, trails, pastures, fields, buildings, etc.) and locations of key resources (forests, firewood, medicinal plants, mushrooms, etc.). Other participatory rural appraisal activities included semistructured interviews with villagers about historical changes, aided by the use of repeat photos (see Viewing Old Photographs, this chapter) that stimulated enthusiastic comparisons of their villages today with photographs from 80 years ago. Detailed satellite images (1 m^2 resolutions) were loaded on palm pilots (PDAs) to map crop terraces, pastures, gardens, buildings, and other structures. These satellite image maps were combined with the participatory rural appraisal maps and information gathered from interviews with villagers about farming systems and analyzed using GIS.



▲ Tibetan villagers mapping land use during the Participatory Rural Appraisal process and the resulting map. Photographs by Jan Salick ►

Land use near Khawa Karpo combines agriculture, pastoralism, forestry, and non-timber product gathering, with notable differences depending on elevation and road access. Agriculture dominates flat land near the village centers and other areas where accessibility, climate, elevation, and water enable cultivation. Agriculture provides food for human consumption, fodder for animal consumption, and cash crops for sale in local markets. Dominant field crops include barley, wheat, turnips, maize, and potatoes. In addition to fields, most families maintain a small garden plot, adjacent to the house. Garden plots contain a variety of vegetables, herbs, and medicines not found in fields. Fruit and nut trees are sometimes incorporated into these gardens, but they are more commonly found around the perimeter of fields, particularly in the lower villages. Walnuts are the most common tree crop and are eaten, pressed for oil, and sold. Orchards are extremely uncommon, although villagers anticipate planting more fruit and nut trees on sloping fields that were abandoned in response to government policies promoting afforestation and outlawing agriculture on steep hillsides. Crop diversity and land area per household is greater in villages at higher elevations (Fig. 1), which have more land available, but these villages can only plant one crop rotation per year and so compensate by cultivating more area and different crops in highlands and lowlands.

Satellite images (1 m^2 resolution) of Tibetan villages were used to determine Tibetan land use in the Khawa Karpo area. Inventoried crop terraces, gardens, and pastures are outlined in red.

Livestock provide the majority of protein and fat to Khawa Karpo diets in the form of dairy and meat. Families raise yaks, pigs, chickens, goats, and sheep. Animal waste is added to compost and fertilizes agricultural fields. Milk and butter are sometimes sold in local markets. Pastoralists shift animals to higher elevations as green pasture becomes accessible in alpine meadows in the summer. In winter months, animals

Crop field in the warm river valley.
Photograph by Jan Salick.

Livestock grazing in an alpine meadow.
Photograph by Robert Moseley.

Oak leaves (on the ground) collected from the nearby forests are used as livestock bedding over winter and then incorporated into soil before planting in the spring to increase fertility and stabilize soils on steep slopes.

Plant collection for market (wild yams) along the road near Yangza village.
Photograph by Robert Moseley.

graze at lower elevations on limited lowland pasture, the postharvest stubble of agricultural fields, and on fodder that has been stored during the worst of winter. Higher-elevation villages have more direct access to summer alpine pastures (Fig. 2).

Forest and alpine resources include timber as well as non-timber products. Examples of non-timber products are fuelwood, building materials, religious incense, edible plants, mushrooms, and medicines. Oak and other forest browse are used as animal fodder and are the other principal component of compost fertilizer. Non-timber products remain a mainstay of Tibetan livelihoods. Data from other studies put the percentage of income earned from non-timber prod-

ucts between 25% and 80% of total family incomes. The most lucrative in the area are matsutake mushrooms (*Tricholoma matsutake*), collected from oak and pine forests and exported to Japan. With an economic premium placed on fresh mushrooms, collectors, merchants, and exporters form elaborate networks to transport matsutake to Japanese markets within 48 hours of harvest. Other lucrative non-timber products include caterpillar fungus, fritillary, and snow lotus. High-elevation villages have more direct access to forests, alpine meadows, and non-timber product lands (Fig. 2). However, villagers without direct road access walk long distances to roadside collection points.

Markets are much more easily accessed from villages with roads. Villages near roads cultivate more cash crops (Fig. 3), most notably grapes, which are presently supported by government subsidies and policy, as well as favored by climate change.

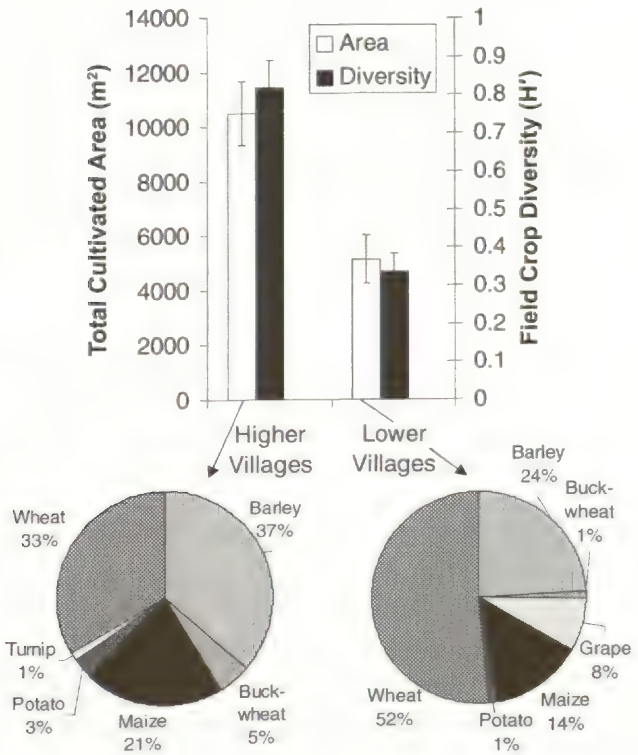


Figure 1. Field crop diversity (H' Shannon-Weaver Index) and total cultivated area (m^2) are significantly greater in Tibetan villages at higher elevations. Families in these villages grow a greater percentage of barley, buckwheat, turnips, potatoes, and maize. At lower elevations, Tibetan families grow a significantly greater percentage of commercial grapes. Error bars denote standard error. From Salick et al., 2005, *Economic Botany* 59(4), figure 3, p. 317. The New York Botanical Garden Press, Bronx, New York. Reprinted with permission.

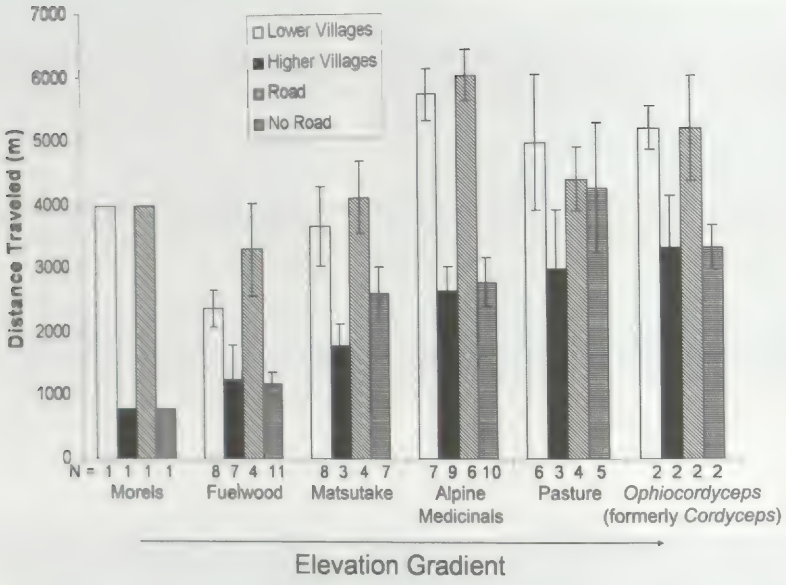


Figure 2. Distances to common property resources are greater for Tibetan villages at lower elevations and those with road access (except for pastures with the latter). Common property resources include pastures and non-timber forest products like fungi and Tibetan medicinal plants. Error bars indicate standard error. From Salick et al., 2005, *Economic Botany* 59(4), figure 6, p. 318, The New York Botanical Garden Press, Bronx, New York. Reprinted with permission.

Additionally, villages near roads use more chemical fertilizers, pesticides, commercial seeds, and plastic sheets for weed control that are now available from markets and government programs.

Access to resources distributed along an elevational gradient determines much of the land use. This use of elevation is exemplified in the broad base of village resources, from valley agriculture to alpine pasture and medicinal plants. Despite a basic similarity in this resource base, the degree to which villages rely on certain resources is partially explained by elevation. A significantly greater crop diversity and cultivated area found in higher-elevation villages (Fig. 1), for example, highlights the stratified vertical distribution of agriculture, which lower villages—hemmed in by roads and rivers—cannot employ. Maize and walnuts are only grown at lower elevations, whereas barley and buckwheat predominate at higher elevations. There are small fields 200–300 m below the higher villages for cultivating lower-elevation crops.

In contrast, road access affects land use principally in terms of market access and creates a shift from a more subsistence-based strategy to an increasingly cash-based economy. This trend is evidenced by cultivation of more crops for sale (Fig. 3) as well as the tendency for villagers to find wage labor outside of the village.

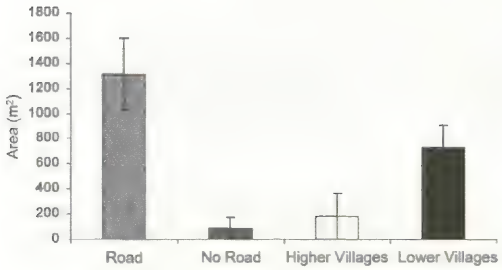


Figure 3. More land area is devoted to cash crops in Tibetan villages at lower elevations and those villages with roads. Cash crops include apple, grape, orange, peach, pear, pomegranate, and walnut. Error bars denote standard error. From Salick et al., 2005, *Economic Botany* 59(4), figure 5, p. 319, The New York Botanical Garden Press, Bronx, New York. Reprinted with permission.

Depending on where Tibetans live, near or far from roads and at higher or lower elevations, there are trade-offs for Tibetan livelihoods. Access to common property resources is better in remote villages (Fig. 2), but it is difficult to get produce to market. Market economies and wage labor are better developed near roads, while traditional Tibetan lifestyles are better maintained in more remote, higher-elevation villages.

PHOTOVOICE

Another simple, yet powerful, participatory tool to facilitate communication between local people and conservationists is photovoice. Local people are equipped with cameras to take photographs that portray their lives, livelihoods, and environment as they interpret them. Facilitators discuss each photo with the village photographers to elicit the stories, or voices, behind the photographs and interpret these stories for practical application to conservation. Because the discussion is framed around the villagers' own photographs, it is the villagers themselves who set the agenda. Photovoice typically takes place over a full year in order to capture the seasonal rhythms of nature and culture in a village.

At Khawa Karpo, photovoice was initiated in seven villages, representing a range of geographical and ecological conditions. A total of 43 photographers took part in the project and were selected to ensure a balance of age, gender, and economic status. In all, 14,000 photos and stories bring the local Tibetan voices of Khawa Karpo into conservation planning. As a follow-up to this photovoice project and to the sacred geography research, a special project was also conducted that specifically focused on the religious pilgrimage around Khawa Karpo, as interpreted through the eyes of local pilgrims.

The great majority of pictures focused on agriculture, both crops and livestock, as well as mushroom and fuelwood collection. This predominant subject matter corroborates the land-use study and the importance of these activities. Near Khawa Karpo, Tibetan livelihoods depend on the combination of agriculture and firewood for subsistence and matsutake mushrooms and other non-timber products for cash income.

▲ Photographer – Mama (female, 49 years old, Yubeng village): "These schoolgirls have to go into the mountains to collect firewood in the cold weather during their winter vacation as branches can be easily found now. They are sometimes told to go by their parents and sometimes do it on their own accord while going into the mountains to play."

▲ Photographer – Baima Zhashi (male, 60 years old, Dechen town): "Qudingong is also called 'Self-circumambulation Temple.' It's the only entrance for Tibetan pilgrims to the outer and inner pilgrimage routes at Khawa Karpo. Here, they get the spiritual key to the sacred mountain. Tens of thousands of Tibetans come to Qudingong every year to get the key to enter the sacred Menri Mountain Palace. These pilgrims are circumambulating the mountain by prostrating. It is said that it takes them more than three months to circumambulate Khawa Karpo like this."

◀ Photographer – Amu (male, 49 years old, Yubeng village), with the voice of the doctor: "I am the only Tibetan medicine practitioner in Yubeng village. In the picture, I am bandaging a patient. I have also participated in photovoice. My brother took this picture. I learned Tibetan medicine from an old practitioner at Yongzong. I mainly treat people with herbs. Sometimes I go to Dechen or Tibet to buy Tibetan and Western medicine to treat my fellow villagers. I can treat all kinds of diseases, both surgical and internal. I do not charge anything for treating bruises or swellings with herbs and only get paid for the ready-made Chinese and Western medicine. Yubeng village has only me as the medical doctor and I have no successor at present. I grow and collect my own medicinal herbs, which are dried in the herb room. I have about 20 species, many with flowers and roots. In the photo, I am treating my son. He hurt himself seriously with an axe when he went to the mountain to cut firewood. He is recovering fast after my treatment."

Although most women's photos focused on the home and family, there is some evidence for changing roles of village women in the photos. Photos showed women assuming a larger role in village leadership than previously described, attending village community assemblies. Also, women's participation in cash economies was documented as more prominent than was previously assumed, with female involvement important both in collecting mushrooms and retail sales

Photographer – Yixi (female, 50 years old, Meilishi village): "This picture shows some nomadic people herding their livestock along a steep, treacherous mountain path. These nomads move to different pastures in different seasons following good grass. They move to lower elevation in the winter and higher in the summer."

of goods and services. Women's work, which has seldom been documented, was shown in the photos, with women working outside the villages for wages and cash. Women's photos often captured nature and environmental threats, such as erosion, harvesting non-timber products and firewood, etc., which could help focus conservation and development priorities. Generally, Tibetan women's studies need more elaboration.

One unanticipated outcome was that photovoice played a reciprocal role in raising villager awareness. One photographer commented that she had never appreciated the beauty of Khawa Karpo until the camera lens and material photograph removed her from her immediate environment, or, perhaps, objectified her sense of place. Finally, people reported, perhaps influenced by the context of the photovoice project, their increased appreciation for the need of environmental protection to maintain the productivity, beauty, and sanctity of Khawa Karpo, their patron deity and mountain home.

BIODIVERSITY

Next, we consider the weft of biodiversity, to match the warp of Tibetan culture and perspectives above. Later, we will interlace these points of view to weave our fabric of conservation.

Great topographical and climatic extremes in the Khawa Karpo region have led to the development of an extraordinary range of environments, from hot, dry river valleys deep in the gorges to high alpine regions on the snowy mountain peaks. This environmental diversity creates a variety of habitats for plants and animals, engendering biodiversity. In addition to habitat diversity, there is biogeographical diversity. Khawa Karpo lies within transitions among the Tibetan Plateau, temperate China, and the lowlands of Southeast Asia, resulting in the unique mixing of alpine, temperate, and tropical species. The renowned biodiversity of the Hengduan Mountains and of Khawa Karpo results from this congruence of topography, climate, and biogeography. In our research we broadly distinguish three coincident components of this rich native biodiversity: vegetation, plant species, and animal species.

VEGETATION

Vegetation patterns of Khawa Karpo were analyzed by species composition, structural characteristics within communities, and spatial distributions across the landscape. This process involved computer mapping and field sampling. First, satellite imagery was processed to create an initial map of landcover units. Next, over the course of three field seasons, teams of vegetation scientists traversed the Khawa Karpo area sampling vegetation communities. These field samples were used to (1) document plant species composition and abundance; (2) identify vegetation types based on species composition; (3) correlate vegetation types with environmental variables; and (4) refine the initial computer-generated map and assign vegetation types to the map units based on field sampling ("ground truthing").

During field sampling, all plant species were recorded and their abundance estimated in 167 one-tenth ha sample plots. These data, in conjunction with satellite image mapping, were used to characterize Khawa Karpo plant

Shrublands (arid low-elevation). Photograph by Robert Moseley.

Warm needleleaf forest (*Pinus*). Photograph by Robert Moseley.

Mixed needle and broadleaf forest.
Photograph by Robert Moseley.

Sclerophyllous broadleaf forest (*Quercus*, on slopes across center of photo). Photograph by Robert Moseley.

Cold temperate needleleaf forest (*Abies*).
Photograph by Robert Moseley.

Meadow (alpine meadow).
Photograph by Robert Moseley.

Shrublands (alpine *Rhododendron*).
Photograph by Robert Moseley.

Alpine scree (snow lotus [*Saussurea laniceps*] in foreground). Photograph by Robert Moseley.

associations (see Appendix 1, Vegetation Types). Following the hierarchical vegetation classification system in *The Vegetation of Yunnan* by Wu et al. (1987), we identified 10 vegetation types for the Khawa Karpo area, nine natural and one anthropogenic, which are divided into 27 vegetation communities. In addition to these native vegetation types, we also identified three abiotic landcover types (river/rock/snow and glacier).

Hot temperate shrublands, along with most permanent human habitation, are found at the lowest elevations along the Lancang River. The warm needleleaf forest is the lowest forest zone, occurring above hot temperate shrublands in most areas. Warm needleleaf forest, mixed needle and broadleaf forest, sclerophyllous broadleaf forest, and deciduous broadleaf forest are found at middle elevations and vary with temperature, slope, and moisture. Cold temperate needleleaf forests are the highest elevation forests and typically range from ~3000 m to the treeline (~4000 m). Within these highest forests, natural and man-made openings often occur in valley bottoms, dominated by cold temperate shrublands and subalpine meadows. Cold temperate shrublands, alpine meadows, and alpine screes constitute the alpine mosaic ecosystem and occur between the upper treeline and rocks, snow, and glaciers of the highest peaks. See Appendix 1, Vegetation Types, for descriptions of the biological and environmental characteristics of all plant associations.

Climatic and topographical gradients are important drivers determining the distribution of vegetation at Khawa Karpo. Along the steep elevational gradient there is a parallel precipitation gradient with mean-annual precipitation rapidly increasing from the dry river valleys up to the well-watered mountain tops. Conversely, temperature decreases rapidly with increasing elevation along this complex gradient. When we sampled along elevational transects, setting five random one-tenth ha plots at 200 m elevational intervals, the results confirmed the importance of this multivariable, elevational gradient. Elevation, including the corresponding precipitation and temperature variables, is unequivocally the primary determinant of vegetation and plant species distribution in the Khawa Karpo area (Fig. 4).

What is more surprising is the distribution of plant species richness and biodiversity over the elevational gradient (Fig. 5). Generally, plant biodiversity and richness increase with precipitation and temperature, but at Khawa Karpo, these two variables are inversely distributed along the elevational gradient. Perhaps as a result, plant species diversity and richness show little pattern and instead are fairly constant over the landscape. Nonetheless, the greatest plant richness and highest biodiversity are found in alpine meadows at the highest elevations (above 4000 m). The next richest and most biodiverse plant community is hot-dry valley shrub vegetation at the lowest elevation (~2000 m). Both alpine meadows and hot temperate shrublands are often overlooked in conservation programs due to their

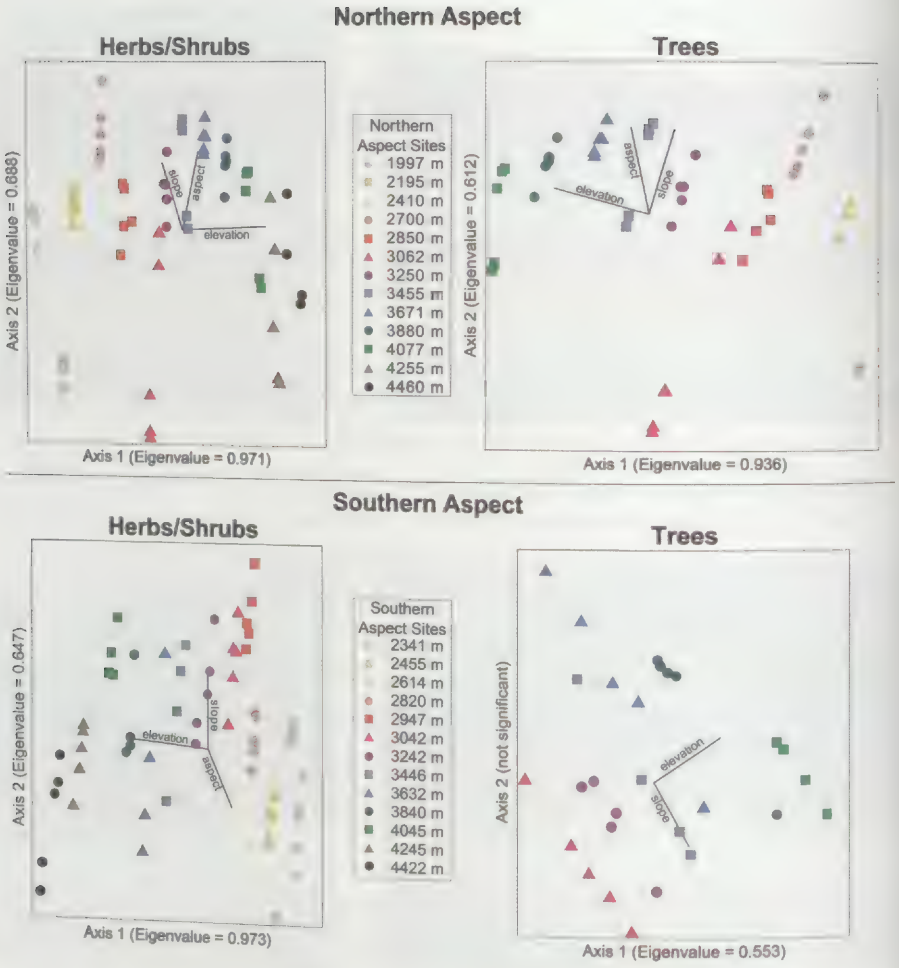


Figure 4. Vegetation gradient analyses performed with canonical correspondence analysis (CCA; PC-ORD, Version 4.20; McCune & Mefford, 1999) confirmed elevation as the primary environmental variable determining plant species distribution in both northern- and southern-facing transects, with aspect (northness) and slope secondary variables.

unprepossessing stature and scrubby appearance, respectively. Statuesque, old-growth spruce-fir (*Picea–Abies*) forest, although grandly magnificent and attractive to conservationists, is among the least rich and biodiverse vegetation type.

Aspect is another environmental determinant of vegetation. South-facing slopes receive more sunshine and are warmer and drier than cool northern slopes. Hot temperate shrublands and oak (*Quercus*) forests are much more extensive on southern aspects, whereas spruce-fir (*Picea–Abies*) forests dominate a greater area on northern aspects.

In addition to the elevational gradient, latitudinal gradients in climate and geology make the northern and southern regions of Khawa Karpo environmentally

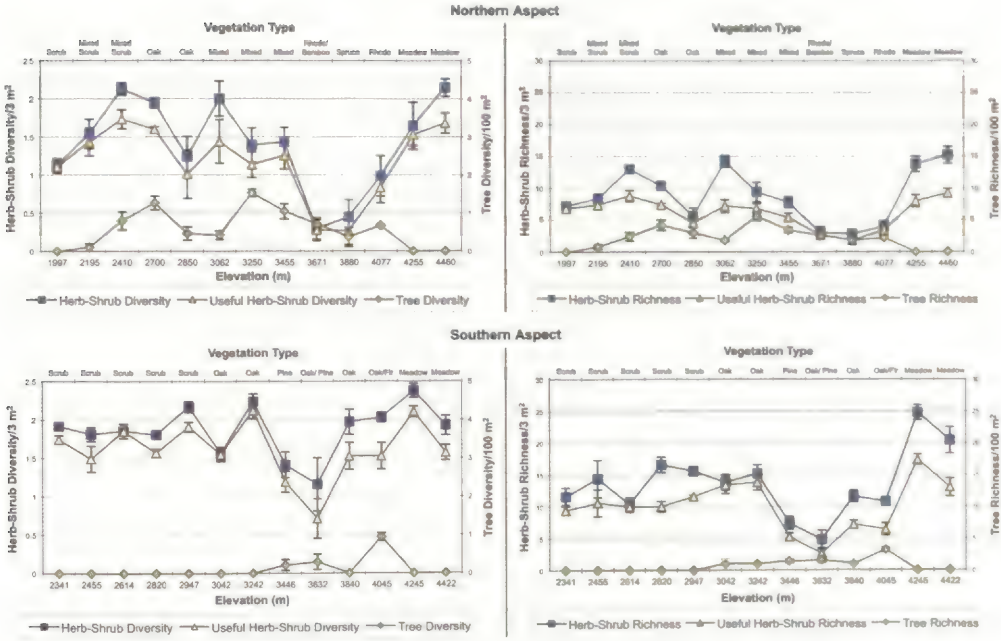


Figure 5. Plant diversity (graphs on the left) and species richness (graphs on the right) of the north- and south-facing slopes of Mt. Khawa Karpo. Elevation and vegetation type at each site are given on the horizontal axes. Note that herb and shrub statistics are per 3 m^2, while tree statistics are per 100 m^2. Whiskers denote standard error.

and ecologically distinct from each other. Since there are no high mountains west of the southern region, precipitation, including snowfall, is much greater in the south. For example, snow is usually gone from the alpine regions in the north by the end of May and treeline is near 4300 m. At the southern end of Khawa Karpo, however, snow lies in the high country until the end of June and treeline is at 4000 m. In general, the elevational distribution of vegetation is similar from north to south, but in the northern region with less snow, vegetation types are typically 100–300 m higher than comparable vegetation types in the south. Another consequence of the lower mountains in the south is a weaker rain shadow, so instead of the climate at low elevations in the south being warm and dry, it is relatively warm and wet. This warm-wet environment supports a small area of sclerophyllous broadleaf forest south of Khawa Karpo.

Geology also differs from north to south. In the south and middle sections of the range, basalts, granite, and crystalline metamorphic rocks predominate and form a substrate that is less permeable to water drainage and weather into large blocks. North of the glaciated peaks, calcareous sediments and metamorphic rocks predominate and are more permeable and weather into small rocks. As a result, in the south there are more subalpine meadows at higher elevations and a lack of alpine

Table 1. The flora of Khawa Karpo by major plant group.

Taxa	Families	Genera	Species
Lycophytes (lycopodiums, selaginellas)	2	2	9
Pteridophytes (ferns)	n/a	47	202
Gymnosperms (conifers)	4	11	22
Angiosperms (flowering plants)	115	515	1632
Total		**575**	**1865**

Table 2. Plant genera with 20 or more species at Khawa Karpo.

Plant Genera	Common Name	Number of Species
PTERIDOPHYTES (FERNS)		
Dryopteris	male fern	26
Polystichum	sword fern	24
ANGIOSPERMS (FLOWERING PLANTS)		
Asteraceae		
Saussurea	snow lotus	29
Ericaceae		
Rhododendron	rhododendron, azalea	40
Gentianaceae		
Gentiana	gentian	32
Orobanchaceae		
Pedicularis	wood betony	42
Papaveraceae		
Corydalis	corydalis	35
Primulaceae		
Primula	primrose	31
Polygonaceae		
Polygonum	jointweed	21
Rosaceae		
Rosa	rose	20
Salicaceae		
Salix	willow	33
Saxifragaceae		
Saxifraga	saxifrage	43

Rhododendron. Photograph by Robert Moseley.

Gentiana. Photograph by Robert Moseley.

Primula. Photograph by Robert Moseley.

Pedicularis. Photograph by Robert Moseley.

scree, with the opposite in the north. Scree and alpine meadows characteristic of the north are habitats for many medicinal plants, explaining why the northern end of Khawa Karpo was the original Menri Mountains (Medicine Mountains).

FLORA

The Hengduan Mountains are considered the most floristically rich temperate region on Earth. Latitudinally, they lie just north of the convergence zone between the temperate Palearctic and tropical Indo-Malay biogeographical realms, and verti-

cally they contain the subtropical to alpine environmental gradient discussed above. The number of plant species is very high as is the number of species endemic to the region. It is this combination of plant species richness and endemism that makes conservation of the Hengduan Mountains a global conservation imperative.

The flora is the best known component of biodiversity at Khawa Karpo (see Appendix 2, Checklist of Vascular Plants). Floristic exploration of Khawa Karpo has documented the presence of 1865 species (Table 1). Twelve genera are exceptionally speciose (Table 2), among which are well-known horticultural plant groups such as primrose, rhododendron, gentian, and saxifrage, as well as medicinal plants. As mentioned, the area contains many species endemic to the Hengduan Mountains and three species endemic to the Khawa Karpo range itself, including *Dryopteris yungtzeensis*, *Rhododendron nakotiltum*, and *Saxifraga nanelloides*.

Under Chinese conservation law, six plant species and two fungi that occur at Khawa Karpo are considered endangered and are nationally protected. There are three protection classes under the law. Species in both categories have similar protection levels, with Class 1 species being in greater need of conservation (presumably rare or more threatened) and requiring national authorization for removal. To fully understand the true conservation status of these and other rare species, however, we need more information than is contained in a floristic checklist and associated herbarium collections. So, in the next phase of floristic research, we conducted field surveys for the most vulnerable species to document their geographic distribution, habitat relationships, population status, and threats to viability. Here, we report the *China Plant Red Data Book* protection classes (class 1, critically endangered; class 2, endangered; class 3, vulnerable) for these six plant species and two fungi, plus an orchid heavily collected for horticulture (*Cymbidium tortisepalum*):

Kingdonia uniflora – This diminutive herb in the buttercup family is known from a few widely scattered locations in the Hengduan Mountains. It was first discovered at Khawa Karpo in 1911 near Dokerla Pass, by Frank Kingdon-Ward, for whom the genus was named. It grows in moss under the canopy of cold temperate needleleaf forests. It is classified nationally as class 1, critically endangered.

Picea brachytyla (Sargent's spruce) – This widespread species is favored for timber. Population declines are not documented but are believed to be considerable. It is classified nationally as class 2, endangered.

Pseudotsuga forrestii (Lancang fir) – This massive tree is endemic to the Hengduan Mountains. It occurs in mixed needle and broadleaf forests and has been heavily exploited for building construction. It is classified nationally as class 2, endangered.

The snow leopard (*Uncia uncia*) survives at very low population levels around Khawa Karpo, if it remains there at all. Photograph by Milan Trykar, courtesy of Snow Leopard Trust. ▶

Neopicrorhiza scrophulariiflora – This small herb grows in alpine meadows of the Hengduan Mountains. It is heavily sought after by commercial plant collectors for use in pharmaceutical manufacturing. It is classified nationally as class 2, endangered.

Polystichum glaciale – This fern is endemic to the Hengduan Mountains, occurring in alpine and subalpine scree habitats. Even though it has a wide range, it is always rare. It is classified nationally as class 1, critically endangered.

Taxus wallichiana – The genus *Taxus* is a well-known cancer drug for which the trees are over-harvested in China. Traditionally in Tibet, wooden flasks of *Taxus* are filled with alcoholic beverages or tea, which when steeped in *Taxus* become medicinal. It is classified nationally as class 1, critically endangered.

Cymbidium tortisepalum – Although *Cymbidium tortisepalum* is not on the Chinese protected list, the Convention on International Trade in Endangered Species (CITES; endangered species for which international trade is prohibited) includes all orchids. CITES limits export but does not limit domestic Chinese trade, which has a high demand for orchids. This particular orchid is endemic to the Hengduan Mountains of northwestern Yunnan. Although it can be cultivated easily, native forms continue to be heavily sought after by the horticultural trade, which seeks exotic new colors and shapes. It has been unsustainably harvested from the wild. It inhabits subtropical evergreen broadleaf forests at the southern end of Khawa Karpo.

Ophiocordyceps sinensis (formerly *Cordyceps sinensis*) – "Caterpillar fungus" is heavily harvested for sale near Khawa Karpo and throughout the eastern Himalayas. It is considered medicinal for vigor, strength, and potency. *Ophiocordyceps sinensis* is a species of ascomycete fungi that parasitizes the ghost moth caterpillar (*Thitarodes* [Lepidoptera: Hepialidae]). The fungal mycelium consumes the caterpillar tissue and then produces an elongated fruiting body. The degree to which this fungus is threatened is unclear; however it is classified nationally as class 2, endangered.

Tricholoma matsutake – Matsutake mushrooms are the major source of cash income for Tibetans near Khawa Karpo and in much of northwestern Yunnan. They are considered over-harvested, although habitat loss is probably more threatening. We do not know how threatened populations of matsutake are around Khawa Karpo (with largely intact forest); however, it is classified nationally as class 2, endangered.

FAUNA

With higher habitat diversity, the native fauna of Khawa Karpo is thought to be similarly diverse; however, little was known about native fauna when we began. Initially, our three objectives were to (1) compile a checklist of mammals and birds; (2) estimate population levels for key species, where possible; and (3) identify animal conservation priorities. For the checklist, we used a variety of sources that included museum specimens, unpublished surveys, and workshops with zoologists, local officials, and villagers. The workshops also yielded subjective data on the abundance and conservation status of large mammals and prominent birds. Following this preliminary work, the International Snow Leopard Trust and Kunming Institute of Zoology conducted field surveys of Khawa Karpo and surrounding areas for big cats and ungulates. No data have been collected for fish, reptiles, amphibians, or invertebrates.

The preliminary list of Khawa Karpo animals (see Appendix 3) contains 67 mammals and 129 birds. From available information, we identified two additional groups of wild animals that should be conservation priorities at Khawa Karpo: big cats and ungulates. Below are brief explanations of why conservation efforts should be focused on these animal groups.

Big cats – Three leopards have been reported for the area, common leopard (*Panthera pardus*), clouded leopard (*Neofelis nebulosa*), and snow leopard (*Uncia uncia*). All three leopards are classified as endangered under Chinese law. Surveys determined that both common leopard and snow leopard probably occur in the area, but that their population levels are very low. Clouded leopard is usually found in subtropical evergreen broadleaf forest, and their distribution may reach the southern Khawa Karpo area. Like nearly all large wildlife in China, illegal hunting and trapping, in combination with law enforcement capacity of conservation agencies, represent the greatest threat to big cats.

Ungulates – At least 10 species of ungulates occur in the area, and nearly all are

Table 3. Estimated populations of select ungulates near Khawa Karpo. Data were compiled from interviews with Tibetan villagers and professional zoologists.

Scientific Name	Common Name	Estimated Number
Moschus chrysogaster	alpine musk deer	~1000
Moschus berezovskii	forest musk deer	~1000
Naemorhedus cranbrooki	red goral	200–800
Naemorhedus sumatraensis	serow	1500–2000
Naemorhedus caudatus	Chinese goral	1200–1500
Pseudois nayaur	blue sheep (bharal)	300–500
Rusa unicolor	sambar deer	200–300

classified as endangered in China. We integrated interviews with Tibetan villagers and professional zoologists to preliminarily estimate populations of selected species (Table 3). Illegal hunting and trapping represent the greatest threat to ungulate populations, especially those that have high cash value such as musk deer, which are killed for their glands used in traditional medicine and in the perfume industry.

Many locals point out that following the province-wide hunting ban established in the early 1990s wolf populations have increased dramatically. Herders are experiencing increased wolf predation of their domestic yaks, and it is possible that large wolf packs are also impacting population levels of wild animals, including ungulates. Even other predators could be affected by increasing wolf populations; for instance, leopards could be negatively affected by wolves, competing for the same prey. However, careful research needs to be carried out before these relationships or ungulate conservation status can be established.

ETHNOBOTANY: INTERWEAVING CULTURE AND NATURE

The remarkable cultural and biological diversity of Khawa Karpo is closely interwoven. As we saw in the study of land use, the rich plant biodiversity of the area supports Tibetan livelihoods. Ultimately, conservation goals for the area should be balanced with human needs and supported and enriched by Tibetan traditional ecological knowledge.

THREATENED USEFUL PLANT SPECIES

As a starting point, we evaluated the conservation status of threatened useful plant species in Khawa Karpo. We chose two groups of experts to question: university-trained botanists and Tibetan medical doctors trained in plant identification and

Table 4. Threatened plants and fungi of northwest Yunnan with medicinal and/or ornamental use, as indicated by botanists and by Tibetan doctors. Not all of these species have been found in the Khawa Karpo area. Family names follow the updated APG III classification (Angiosperm Phylogeny Group, 2009) used in Appendix 2, Checklist of Vascular Plants (See Law and Salick, 2007).

Botanists' List	Plant Use Categories
Arisaema lobatum Engl. (Araceae)	skin and related tissue, poisonous
Corydalis bimaculata C. Y. Wu & T. Y. Shu (Papaveraceae)	digestive system
Cymbidium hookerianum Rchb. f. (Orchidaceae)	ornamental
Cymbidium tortisepalum Fukuy. (Orchidaceae)	ornamental
Fritillaria cirrhosa D. Don (Liliaceae)	nervous system and mental health, respiratory system
Fritillaria delavayi Franch. (Liliaceae)	nervous system and mental health, respiratory system
Lilium souliei Franch. (Liliaceae)	nervous system and mental health, respiratory system
Meconopsis impedita Prain (Papaveraceae)	muscular-skeletal system
Meconopsis lancifolia (Franch.) Franch. ex Prain (Papaveraceae)	muscular-skeletal system
Megacodon stylophorus (C. B. Clarke) Harry Sm. (Gentianaceae)	urinary system
Paeonia delavayi Franch. (Paeoniaceae)	belief systems
Pegaeophyton scapiflorum (Hook. f. & Thomson) C. Marquand & Airy Shaw (Brassicaceae)	respiratory system
Saussurea gossipiphora D. Don (Asteraceae)	blood and circulatory system, reproduction and sexual health, respiratory system
Saussurea laniceps Hand.-Mazz. (Asteraceae)	blood and circulatory system, reproduction and sexual health, respiratory system
Saussurea medusa Maxim. (Asteraceae)	blood and circulatory system, reproduction and sexual health, respiratory system
Soroseris glomerata (Decne.) Stebbins (Asteraceae)	blood and circulatory system, reproduction and sexual health, respiratory system

Table 4. continued

Tibetan Doctors' List	Plant Use Categories
Aconitum richardsonianum Lauener (Ranunculaceae)	muscular-skeletal system
Aconitum sp. indet. (Ranunculaceae)	muscular-skeletal system, non-Western medical systems, e.g., heating/cooling, etc.
Aconitum tanguticum (Maxim.) Stapf (Ranunculaceae)	skin and related tissue, infections
Aconitum vilmorinianum Kom. (Ranunculaceae)	sensory system
Acorus calamus L. (Araceae)	sensory system
Adhatoda vasica Nees (Acanthaceae)	blood and circulatory system
Ainsliaea pertyoides Franch. (Asteraceae)	muscular-skeletal system, non-Western medical systems, e.g., heating/cooling, etc.
Angelica sinensis (Oliv.) Diels (Apiaceae)	sensory system
Arisaema erubescens (Wall.) Schott (Araceae)	sensory system
Aristolochia griffithii Hook. f. & Thomson ex Duch. (Aristolochiaceae)	digestive system
Chrysosplenium carnosum Hook. f. & Thomson (Saxifragaceae)	digestive system, sensory system
Coptis Salisb. sp. indet. (Ranunculaceae)	digestive system, immune system
Corydalis DC. sp. indet. 1 (Papaveraceae)	digestive system, sensory system, skin and related tissue
Corydalis DC. sp. indet. 2 (Papaveraceae)	digestive system, sensory system
Corydalis yanhusuo W. T. Wang (Papaveraceae)	digestive system, respiratory system
Crocus sativus L. (Iridaceae)	blood and circulatory system, muscular-skeletal system
Delphinium L. sp. indet. (Ranunculaceae)	muscular-skeletal system
Dioscorea cirrhosa Lour. (Dioscoreaceae)	digestive system
Dolomiaea souliei (Franch.) C. Shih (Asteraceae)	digestive system, infections
Dracocephalum bullatum Forrest ex Diels (Lamiaceae)	sensory system
Dracocephalum tanguticum Maxim. (Lamiaceae)	muscular-skeletal system, sensory system
Elaeagnus viridis Servettaz (Elaeagnaceae)	digestive system
Fragaria orientalis Losinsk. (Rosaceae)	blood and circulatory system, non-Western medical systems, e.g., heating/cooling, etc.
Fritillaria cirrhosa D. Don (Liliaceae)	infections
Fritillaria delavayi Franch. (Liliaceae)	blood and circulatory system, sensory system
Galium L. sp. indet. (Rubiaceae)	blood and circulatory system, respiratory system
Gastrodia elata Blume (Orchidaceae)	blood and circulatory system
Gentiana L. sp. indet. 1 (Gentianaceae)	digestive system, respiratory system
Gentiana L. sp. indet. 2 (Gentianaceae)	respiratory system

Table 4. continued

Tibetan Doctors' List	Plant Use Categories
Gentiana stipulata Edgew. subsp. *tiguensis* (Franch.) T. N. Ho (Gentianaceae)	blood and circulatory system, digestive system, immune system
Gentiana straminea Maxim. (Gentianaceae)	skin and related tissue, poisonous
Gentiana wardii Harry Sm. (Gentianaceae)	blood and circulatory system, digestive system, immune system, poisonous
Gentianopsis grandis (Harry Sm.) Ma (Gentianaceae)	digestive system, immune system
Gymnadenia orchidis Lindl. (Orchidaceae)	muscular-skeletal system
Gynura japonica (Thunb.) Juel (Asteraceae)	sensory system
Halenia elliptica D. Don (Gentianaceae)	digestive system, immune system
Herpetospermum Wall. ex Hook. f. sp. indet. (Cucurbitaceae)	digestive system
Hypecoum leptocarpum Hook. f. & Thomson (Papaveraceae)	digestive system, respiratory system
Incarvillea compacta Maxim. (Bignoniaceae)	muscular-skeletal system, sensory system
Inula racemosa Hook. f. (Asteraceae)	digestive system
Lagotis alutacea W. W. Sm. (Plantaginaceae)	blood and circulatory system, respiratory system
Lagotis Gaertn. sp. indet. (Plantaginaceae)	digestive system, immune system, sensory system
Lagotis yunnanensis W. W. Sm. (Plantaginaceae)	blood and circulatory system
Lancea tibetica Hook. f. & Thomson (Phrymaceae)	digestive system, muscular-skeletal system
Mahonia duclouxiana Gagnep. (Berberidaceae)	digestive system
Meconopsis horridula Hook. f. & Thomson (Papaveraceae)	digestive system, non-Western medical systems, e.g., heating/cooling, etc.
Meconopsis torquata Prain (Papaveraceae)	muscular-skeletal system, respiratory system, non-Western medical systems, e.g., heating/cooling, etc.
Nardostachys grandiflora (D. Don) DC. (Caprifoliaceae)	immune system, respiratory system
Ophiocordyceps sinensis[1] (Berk.) G. H. Sung, J. M. Sung, Hywel-Jones & Spatafora (Ophiocordycipitaceae)	infections
Oxytropis reticulata P. C. Li (Fabaceae)	
Panax japonicus (Nees) C. A. Mey. (Araliaceae)	muscular-skeletal system
Pedicularis longiflora Rudolph (Orobanchaceae)	skin and related tissue, infections
Pedicularis przewalskii Maxim. (Orobanchaceae)	digestive system, muscular-skeletal system
Pedicularis trichoglossa Hook. f. (Orobanchaceae)	digestive system, non-Western medical systems, e.g., heating/cooling, etc. digestive system

Table 4. continued

Tibetan Doctors' List	Plant Use Categories
Pegaeophyton scapiflorum (Hook. f. & Thomson) C. Marquand & Airy Shaw (Brassicaceae)	muscular-skeletal system
Phlomis L. sp. indet. (Lamiaceae)	respiratory system, poisonous
Phlomis younghusbandii S. K. Mukerjee (Lamiaceae)	reproduction and sexual health
Plantago asiatica L. (Plantaginaceae)	urinary system
Plantago depressa Willd. (Plantaginaceae)	dental, non-Western medical systems, e.g., heating/cooling, etc.
Polygonum L. sp. indet. (Polygonaceae)	blood and circulatory system
Primula secundiflora Franch. (Primulaceae)	blood and circulatory system
Primula L. sp. indet. (Primulaceae)	sensory system
Pterocephalus hookeri (C. B. Clarke) Diels (Caprifoliaceae)	digestive system
Punica granatum L. (Lythraceae)	digestive system, muscular-skeletal system
Pyrus pashia Buch.-Ham. ex D. Don (Rosaceae)	reproduction and sexual health
Rheum officinale Baill. (Polygonaceae)	blood and circulatory system, digestive system
Rhodiola crenulata (Hook. f. & Thomson) H. Ohba (Crassulaceae)	blood and circulatory system
Rhodiola L. sp. indet. (Crassulaceae)	blood and circulatory system, digestive system
Rhododendron L. sp. indet. (Ericaceae)	blood and circulatory system, reproduction and sexual health
Saussurea laniceps Hand.-Mazz. (Asteraceae)	sensory system
Saxifraga L. sp. indet. 1 (Saxifragaceae)	digestive system, muscular-skeletal system
Saxifraga L. sp. indet. 2. (Saxifragaceae)	digestive system
Sinolimprichtia H. Wolff sp. indet. (Apiaceae)	reproduction and sexual health
Sisymbrium heteromallum C. A. Mey. (Brassicaceae)	digestive system
Stephania delavayi Diels (Menispermaceae)	muscular-skeletal system
Swertia L. sp. indet. (Gentianaceae)	digestive system
Taraxacum tibetanum Hand.-Mazz. (Asteraceae)	reproduction and sexual health
Thlaspi arvense L. (Brassiaceae)	muscular-skeletal system
Verbena officinalis L. (Verbenaceae)	urinary system

[1]Formerly *Corydiceps sinensis* Berk.

use. Not surprisingly, the two groups differed in their opinions on conservation priorities for useful species. What was more surprising and instructive was how differently they interpreted the question of which species to conserve and how differently they went about answering it. Eventually, we draw on both of these equally valid perspectives to set priorities for conservation of useful plant species.

Professional botanists compiled a list of what they deemed the most threatened plant species in the area and then secondarily referred to the literature on plant use (mostly medicinal and horticultural). Also, three botanists worked in consultation to determine one authoritative list. We initially asked for 20 plant species, but they conservatively settled for 16 species on which they could all agree (Table 4).

Tibetan doctors did nearly the opposite and assessed threatened plant species from their perspective of medicinal use. Each Tibetan doctor worked independently since they live in distant villages. Each immediately listed more than 20 of the most useful plant species (all of which are currently used as medicine), and each had a hard time limiting themselves to that number since there are hundreds. Doctors' opinions on use and perceived threat status varied among themselves, depending on their training. However, to one and all, use was primary. Then, secondarily, they evaluated how threatened these plant populations appeared to them. To the doctors, conservation status was a novel concept to which they responded conservatively compared to the botanists. When we asked the doctors to evaluate the conservation status of species on the botanists' list (all of which botanists rated as severely threatened), they rated them much lower, from threatened to not threatened.

We equally value the botanists' and Tibetan doctors' conservation priorities for threatened useful plants. There are no stronger, more powerful advocates for conservation than Tibetan doctors, *if* we can elicit their partnership on equal footing. They are already highly trained in plant identification and use. With their knowledge, training, and religious conviction, they have tremendous status and are revered by the local people. If Tibetan doctors speak, the people listen. In return, conservationists must listen and learn with humility and gratitude. Tibetan doctors live and work in the Himalayan Mountains in all seasons and have detailed knowledge of plant populations that is comparable if not equivalent to that of professional botanists.

We looked for concurrence of threatened useful species listed by both Tibetan doctors and botanists and targeted nine intensively harvested species: *Saussurea laniceps, Saussurea medusa, Fritillaria cirrhosa, Fritillaria delavayi, Megacodon stylophorus, Corydalis bimaculata, Stebbinsia umbrella (Soroseris umbrella), Meconopsis impedita,* and *Meconopsis lancifolia.* Our evaluations of threat and population viability focus on these medicinal species.

▲ *Saussurea medusa*. Photograph by Wayne Law.

◀ *Saussurea laniceps*. Photograph by Wayne Law.

▼ *Fritillaria cirrhosa*. Photograph by Robert Moseley.

◀ *Megacodon stylophorus*. Photograph by Robert Moseley.

▼ *Fritillaria delavayi*. Photograph by Robert Moseley.

Corydalis bimaculata.
Photograph by Wayne Law.

Stebbinsia umbrella (Soroseris umbrella).
Photograph by Wayne Law.

Meconopsis impedita.
Photograph by Wayne Law.

Meconopsis lancifolia.
Photograph by Wayne Law.

Population Ecology

Plant population ecology is a useful tool that enables us to estimate the growth rate of a population. With factors including birth, death, growth, and life cycle, we can model a plant population to see if it is expected to persist (population growth rate $\lambda > 1$) or go extinct ($\lambda < 1$) under present conditions. We can also estimate how much harvest can occur before causing a negative impact on the population. From these models we can also determine if populations are growing, stable, or overexploited, and we can infer the fate of a population. In addition, modeling allows us to analyze which stages of a plant are the most sensitive to harvest. For three years we measured multiple populations of our target species.

Several plants among our target species have declining populations due to their popularity in medicinal markets. Some popular medicinal plants like "bei mu" and "zhi mu" (*Fritillaria cirrhosa* and *F. delavayi*) have become so scarce that matrix models cannot be successfully constructed, although there is more evidence than necessary to conclude that they are over-harvested, and most of the plants we measured were harvested by commercial collectors. One of the rare and intensively harvested "blue poppies," *Meconopsis impedita*, has a population growth rate well below 1 ($\lambda = 0.59$), attesting to its decline and threatened status. Some plants (e.g., *Stebbinsia umbrella* [*Soroseris umbrella*]) growing on harsh, rocky and scree slopes demonstrate declining populations, even with low rates of harvest.

Other medicinal plant populations (e.g., *Meconopsis lancifolia*, *Megacodon stylophorus*, *Corydalis bimaculata*, and *Saussurea medusa*) show slightly positive population growth rates ($\lambda > 1$) and therefore may tolerate some harvest. However, harvest should be restricted *only* to local Tibetan doctors. Commercial collection will force populations far below a sustainable harvest. Two species of the famous snow lotus (*Saussurea laniceps* and *S. medusa*) are examined in more detail.

Snow Lotus

Charismatic plant taxa are not usually considered flagship species (or emblematic species), but in the case of snow lotus (*Saussurea laniceps*), such status is not inappropriate. These large, wooly orbs grow at the highest elevations of plant life in the Himalayas (> 4000 m), providing sheltered tunnels through their fuzz that exactly fit local bumble bees (*Bombus rufofasticatus* Smith and *B. festivus* Smith), allowing them to get out of the harsh elements while pollinating the plant. The fuzz simultaneously protects flowers and developing seeds. Snow lotus are monocarpic, flowering only once in their long (≥ 10 years) life, just before they die. These bizarre flowers are pictured in the most ancient Tibetan medical texts and used as heart medication and in the treatment of headaches and female health problems associated with menstruation, hemorrhaging, and birth. They are now extremely popular medicinal plants in Tibet and China: Tibetan medicine shops

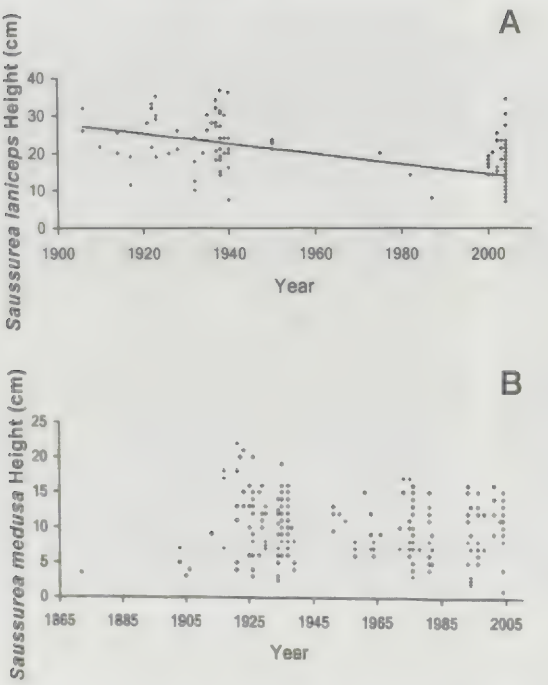


Figure 6. Shrinking snow lotus. (A) Decline in height of *Saussurea laniceps* from herbarium specimens and field collections over the past 100 years ($r^2 = 0.4361$, $P = 0.0001$). (B) Height of *S. medusa* collections from the past 120 years, with no significant decline in height; until very recently, this species was collected much less for the market than *S. laniceps*. From Law and Salick, 2005, *Proceedings of the National Academy of Sciences, U.S.A.* 102(29), figure 2, p. 10219. Reprinted with permission.

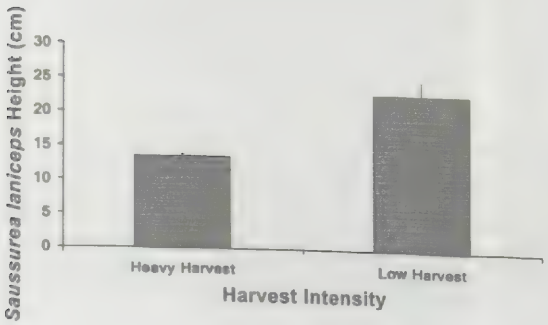


Figure 7. Height of *Saussurea laniceps* plants found at heavily harvested and protected sites. Plants found in heavily harvested sites were on average 9 cm smaller than plants found in protected areas (average plant height, heavy harvest 13.4 cm, standard error ± 0.4, low harvest 22.7 cm, standard error ± 2.0). From Law and Salick, 2005, *Proceedings of the National Academy of Sciences, U.S.A.* 102(29), figure 3, p. 10219. Reprinted with permission.

readily declare that snow lotus is the most popular medicine sold. Tourists also often seek out snow lotus, which, if not collected by intrepid alpine trekkers themselves, can be more conveniently purchased at airports as souvenirs. These oddities of evolution are threatened by their harsh environs, but more so by their own popularity and sales.

Reviewing historical collections of eight major herbaria, we discovered that snow lotus (*Saussurea laniceps*) have decreased in size over the last hundred years (Fig. 6), while *S. medusa*, a sister species that is less preferred as a medicinal herb, has not decreased in size. Additionally, snow lotus growing in Tibetan sacred spaces where commercial collection is not allowed are significantly larger than those growing where commercial collection is common (Fig. 7; the less collected, sister species *S. medusa* does not show this trend). These two sets of data strongly suggest that intensifying commercial collection, which profits most from the largest snow lotus, is exerting a negative evolutionary selection pressure on snow lotus size (*S. laniceps*). The market has rapidly shrunk this snow lotus.

Flower size determines the number of seeds produced so that the declining size of snow lotus also indicates its fertility. With smaller flowers, fewer seeds, and intense commercial harvesting, the population growth rate of snow lotus has fallento unsustainable levels. Snow lotus populations are being forced toward

Examples of pluralism in Tibetan medicine.

◀ Tibetan village doctor collecting plants for local medicinal use. Photograph by Jan Salick.

▼ Vegetative rosettes of a *Gentiana* species unsustainably collected for the medicinal market. Photograph by Robert Moseley.

extinction by both past and present harvests, impacting both its evolution and population ecology. Populations are being devastated by commercial collection.

On a hopeful note, snow lotus is collected in sacred sites by Tibetan doctors only as prescribed by tradition, with devout prayer and in restricted quantities. In these sacred sites snow lotus (*Saussurea laniceps*) size is larger and population growth is stable. This population stability illustrates the effectiveness of Tibetan indigenous knowledge and traditional resource management.

The sister species *Saussurea medusa* is less valuable in the market and currently not threatened by commercial collection. However, markets are starting to buy the less preferred species as snow lotus populations dwindle. We worry about *S. medusa* for an additional reason: it is pollen limited. The high alpine bumble bees may not provide enough pollen for *S. medusa* to reproduce fully. This means that if commercial collection of *S. medusa* increases, reproduction could decline much more precipitously than the already endangered *S. laniceps*. Both species of snow lotus may be endangered in the near future.

MARKETS AND TIBETAN MEDICINE IN LHASA AND KHAWA KARPO

Tibetan medicine historically has had multiple medical lineages, despite ancient, shared literary medical canons. However, since the second half of the 20th century in Tibet, increasing state control and commoditization has led to centralization

and standardization of Tibetan medicine. Here, we investigate how much variation in the use of medicinal plants remains in contemporary Tibetan medicine. Medicinal plants used and/or sold by 15 Tibetan medical institutions, markets, and doctors, as well as two additional non-Tibetan markets, are inventoried. This clearly documents the plurality of Tibetan medical traditions—official, local, and market—while differentiating these from non-Tibetan markets.

In both Lhasa (where the only officially recognized Tibetan doctors are trained) and near Khawa Karpo we inventoried medicinal plant species most commonly used by Tibetan doctors and those in markets, hospitals, clinics, pharmacies, and medicine factories. Then, we compared the inventoried plants from Lhasa and Khawa Karpo to medicinal plants found in an indigenous Bai medicine market in Dali and a Han Chinese traditional medicine market in Kunming. After inventorying and collecting 577 species of medicinal plants and comparing similarities among medical traditions, three very distinct Tibetan groups emerge: local Tibetan doctors, Tibetan medicine markets, and formerly trained Lhasa doctors and Tibetan government institutions (Fig. 8). One tightly knit Tibetan medicine group using similar medicinal plants is the officially government-sanctioned Tibetan medicine; all Lhasa-trained doctors use similar medicinal plants wherever they practice. Other Lhasa institutions and government-sponsored hospitals and clinics throughout Tibet also use these same medicinal plants. However, there is a distinct tradition of medicinal plant use near Khawa Karpo. Historically, there have been many lineages within Tibetan medicine that are no longer officially sanctioned but nonetheless persevere near Khawa Karpo and elsewhere outside of Lhasa. Another distinct group of Tibetan medicinal plants is found in commercial markets, wherever these markets occur in Lhasa, Khawa Karpo, or elsewhere. These Tibetan market plants are distinct from plants used in either official or local Tibetan medicine. The exceptions that prove the rule are two self-taught doctors near Khawa Karpo who began as market collectors—their medicinal plant use is not in agreement with other local doctors but is very similar to use in the commercial medicinal market for which they originally collected. Finally, medicinal plants used by Bai and Han Chinese are the most divergent from Tibetan medicine in all its forms.

A participatory rural appraisal evaluation of Tibetan medicinal plants and indigenous knowledge among Tibetan villagers revealed that few local people have much knowledge about Tibetan medicine. Rather, local people depend on extensively trained Tibetan doctors. When villagers are sick they go to doctors or clinics and take prescribed Tibetan, Chinese, and/or Western medicines. Villagers' knowledge of Tibetan medicines is mostly restricted to commercial species collected for the market, and even then, knowledge is limited about the uses of medicinal plants.

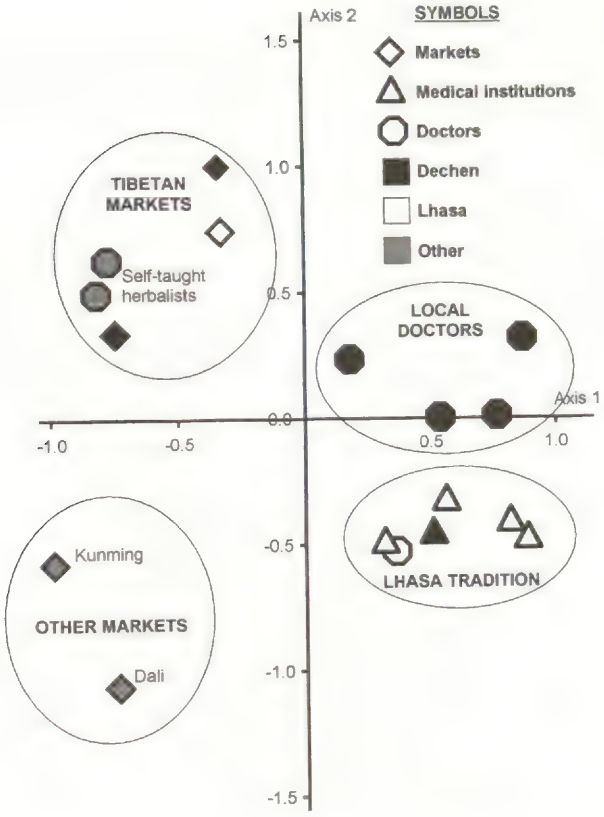


Figure 8. Tibetan medicinal plants used near Khawa Karpo were censused to better understand the various medical traditions present in Tibetan culture. Distinct traditions include the Lhasa tradition, local Tibetan doctors practicing near Mt. Khawa Karpo, and markets selling Tibetan plants. Distinct medicinal markets outside of Tibetan cultural influence were also censused. This ordination is non-metric multidimensional scaling with the Jaccard distance measure, performed with PC-ORD Version 4, the binary presence-absence. From Salick et al., 2006, *Economic Botany* 60(3), figure 2, p. 231, The New York Botanical Garden Press, Bronx, New York. Reprinted with permission.

So, we see quite distinctly that markets, which are threatening some Tibetan medicinal plant populations (for example, the snow lotus), include different plants from those used in traditional Tibetan medicine. It is market forces that must be curbed if threatened medicinal plants are to survive; traditional Tibetan medicine is not threatening plant populations. Also, it is local Tibetan doctors who need to be supported and whose indigenous practices in Tibetan medicine need to be protected, if traditional cultural diversity and local adaptation are to persist. At present, Tibetan traditional medicine is recognized only if it originates from Lhasa. In the border regions of Tibet, Lhasa has little influence outside of administrative towns and cities. Local Tibetan traditions in medicine and other

customs are predominant in rural areas where medical facilities are least available. Local Tibetan medical traditions can be recognized by the government in these outlying, rural areas to provide health care while simultaneously preserving traditional knowledge.

SACRED SPACE

In contrast to the negative pressure being exerted on populations of Tibetan medicinal plants by markets, Tibetan sacred space can be seen as a positive factor for conservation. Elsewhere in the world there is a growing body of evidence that sacred space acts to conserve biodiversity and old-growth forest. For example, in India the biodiversity and cultural value of sacred groves have been particularly well documented and quantified. In populated areas, sacred sites conserve the only natural vegetation without drastic human alteration. The importance of sacred areas in conserving biodiversity has also been documented for Native Americans in the western United States, throughout Africa, in Southeast Asia, and on a more limited basis in Latin America and Europe.

Preliminarily, we needed to refine our investigation because there are many ways in which sacred space might play a role in conservation: (1) sacred space might be delimited in areas of higher biodiversity; (2) sacred space might allow biodiversity to develop in undisturbed areas, protecting these areas from habitat destruction or disturbance; and (3) sacred space might conserve old-growth forests within habitats. We investigated these potential roles differently.

To test whether sacred space is defined in areas of particularly high biodiversity, we superimposed the location of sacred sites onto the vegetation map used to characterize Khawa Karpo plant associations and then added random points both below and above the *rigua* (line delimiting high-elevation sacred space). When comparing random points with sacred sites, we found that sacred sites are placed in vegetation greater in plant richness and biodiversity, simultaneously protecting distinctive useful plants (Fig. 9). Moreover, the sacred space protected by the high-elevation *rigua* has more endemic plants.

Once we tested the initial hypothesis through GIS mapping, we then went to Khawa Karpo, guided and informed by Tibetan doctors, where it was visible that sacred space is protecting areas from degradation: sacred forests were surrounded by pastureland and sacred mountains were heavily forested, whereas adjacent non-sacred mountains were logged or heavily harvested for firewood. With this information we then compared sacred sites with non-sacred sites within the same vegetation types (for example, we compared old-growth sacred spruce–fir (*Picea–Abies*) forests with non-sacred spruce–fir forests). Unlike the biodiversity found in sacred sites within the landscape as a whole, sacred sites within similar vegetation types showed no differences in plant richness, biodiversity, or useful plants. However, there were significantly larger trees (old-growth forest) and more

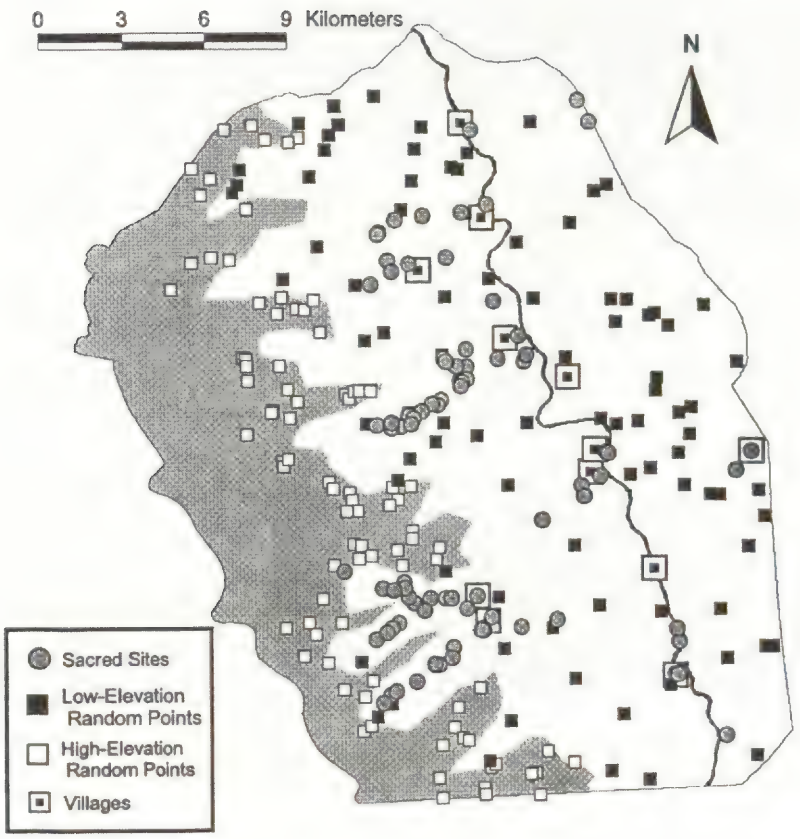


Figure 9. Sacred sites near Khawa Karpo were compared with random points (non-sacred sites) at both low and high elevations across the landscape. The 89 analyzed sacred sites (all located below 4000 m) are compared with 89 points randomly generated across the landscape below 4000 m. Similarly, these low-elevation randomly placed points are compared with 89 points randomly generated across the high-elevation landscape above 4000 m, within the *rigua* zone (gray area to the west). High-elevation random points were not placed in areas of rock or snow, causing the high-elevation random points to appear non-random on the map. From Anderson et al., 2005, *Biodiversity & Conservation* 14(13), figure 5, p. 3073. Reprinted with permission from Springer Science+Business Media.

vegetation cover in sacred sites (Fig. 10). Thus, sacred space functions differently at different scales and protects biodiversity and endemism within the landscape, habitats from destruction, and old-growth forest within habitats.

GRADIENT ANALYSIS, USEFUL PLANT SPECIES, AND THE IMPORTANCE OF LANDSCAPE

As previously mentioned, plant species, richness, and biodiversity varies over an elevational gradient with the greatest richness and highest biodiversity found at

▲ Sacred grove of old-growth oak above Feilaisi village. The boundaries of sacred grove are clearly visible along the skyline. Photograph by Robert Moseley.

◀ Woman from Feilaisi burning incense at a sangsa, or prayer site, in the sacred grove. Photograph by Robert Moseley.

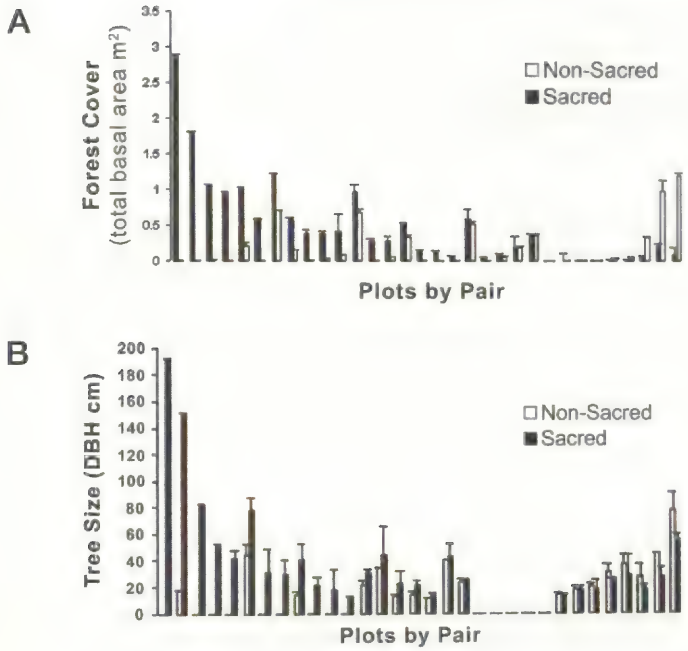


Figure 10. Sacred areas conserve old growth forest. (A) Forest cover (total basal area) of trees in plots located in sacred areas is significantly greater than in plots in non-sacred areas (Kruskal-Wallis, $z = -2.931$, $P = 0.003$). (B) Tree size (average DBH of trees) is significantly greater in plots located in sacred areas than in plots located in nonsacred areas (Kruskal Wallis, $z = -2.979$, $P = 0.003$). Bars denote standard error. Trees with DBH >10 cm were measured. From Salick et al., 2007, *Biodiversity & Conservation* 16, figures, 2, 3, p. 700. Reprinted with permission from Springer Science+Business Media.

the highest elevations (above 4000 m) in alpine meadows. Plants used by Tibetan people, or useful plants, are found throughout the elevational gradient too (Fig. 5). For example, medicinal plants and animal browse occur in the dry lowland scrub; firewood, fertilizer, non-timber products, and construction timber occur in the forests; and rich Tibetan medicinal flora and pasture species occur in alpine meadows. However, as in the previous study, Tibetan doctors working with us stressed the importance of scale in our analyses; to them, any one habitat is no less important—even the outstandingly rich alpine meadows—than the landscape as a whole. They patiently insisted that conservation of the whole landscape was needed to preserve the full component of useful plants found throughout the elevational gradient. Their traditional Tibetan livelihoods depend on this full component of useful plants and the landscape as a whole.

ENVIRONMENTAL AND CULTURAL CHANGE

Traditional societies are sometimes mistakenly thought of as static and unchanging, representing a historical past, or simply not involved in contemporary and

global society. On the one hand, Tibetan villages give a sense of stepping back in time, but conversely, few peoples have experienced the same turbulent contemporary political reality. Change in the Khawa Karpo area—environmental, cultural, economic, governmental—has been historical, continuous, and also contemporary.

We studied change by two related methods. First, we used repeat photographs to measure visible changes in the landscape. Second, we used the photographs to elicit a dialogue with local elders so that change and cultural attitudes toward change could be exposed. Climate change was prominent among the many changes we learned about for the area; however, because of its singular and global importance, we reserve the discussion of climate change for the next section (see Climate Change, this chapter).

REPEAT PHOTOGRAPHY

The past can tell us about the future, or so goes the central tenet of historical ecology, which applies knowledge and understanding of the past to allow us to properly manage resources for the future. In remote areas of the world, such as Khawa Karpo, rarely do historical data exist to inform conservation planning. However, for Khawa Karpo, there are historical photographs that provide a baseline from which to assess past change. Using the relatively simple technique of repeat photography, we created a historical profile of the land and the people of the Khawa Karpo area during the last 100 years. Repeat photography is defined as retaking old photographs from the same photo point, in the same season, and of the same subject, recreating comparable conditions as nearly as possible. We used it to assess the true magnitude of threats, set goals for the future, and measure the progress of conservation.

Our first step at Khawa Karpo was to collect as many old landscape photographs as possible from publications and archives of institutions in the United States and Europe. Of the total set available, we chose only landscape photographs with enough features to aid in the exact relocation of the original photo point. Our collection baseline, or original photos from Khawa Karpo, included about 240 photographs taken by 12 Westerners traveling through the area between 1899 and 1949. To date, we have relocated and retaken 137 photos from the Khawa Karpo area. We created an electronic database with the old image and a new image that captured the same scene and also added related text information about photograph location, origin, and cultural context as well as a description of environmental change. From interpretation of the photographic record thus far, four results emerge as noteworthy in terms of biodiversity conservation.

Forests

Forest cover has changed little during the last 100 years, but forest area and the density of trees have actually increased in many areas. Further research is needed, but it is clear that Khawa Karpo escaped the deforestation experienced in much of the rest of China. From the repeat photographs, it appears that local villagers widely used fire as a management tool during the first half of the 20th century, probably to increase grazing land. Since then, human-caused fire has been eliminated by the government, which has caused some grasslands to reforest and many open woodlands to increase tree cover and become closed-canopy forests. Only localized clearing of forest for crop fields has occurred during the last century. Aerial photos clearly show that some forests have been sustainably used for fuel and construction material, yet forest area and tree density have remained stable or increased in these stands over the last 100 years. This stability is, at least in

Repeat photographs illustrate that arid shrublands in the Lancang River valley have remained unchanged for 80 years. *Left:* 1923. Reproduced with permission from National Geographic Stock, Dr. Joseph Rock. *Right:* 2002. Photograph by Robert Moseley.

Remnants of crop fields in the forest above Liutongjiang village are barely detectable in the repeat photographs of the area 80 years later. *Left:* 1923. Reproduced with permission from National Geographic Stock, Dr. Joseph Rock. *Right:* 2005. Photograph by Robert Moseley.

part, attributable to traditional Tibetan forestry management, including sacred site conservation, selective and limited logging, natural forest regeneration, and forest conservation for non-timber forest product harvesting. The afforestation, or expansion of forested lands, around Khawa Karpo is strikingly different from accounts of forest cover dynamics in China generally and in other parts of Yunnan specifically where deforestation dominated. Since government policies were no different (little restraint of logging until the complete logging ban of 1999) among these sites, we suggest that Tibetan land management has had positive effects in conserving forest cover.

Arid Shrublands

In the case of arid shrublands (see Appendix 1, Vegetation Types; hot temperate shrublands), the lack of change shown in the repeat photos was instructive. Photo comparisons along the Lancang River illustrate that arid shrublands have historically dominated the low-elevation landscape. This arid vegetation type is created by mountain rain shadows and predominantly occurs in the river valleys where rain-producing systems never descend. However, many people in southwestern China, including the general public and government officials, believe that this non-forested zone has been caused by recent deforestation. In many places, this misconception has led to government investment in reforestation programs for

areas of land that are too dry to support forests. The repeat photos provide direct evidence that arid shrublands historically existed in the area and were not caused by deforestation.

Agriculture

The repeat photos also showed that clearing native vegetation for new crop fields has not increased dramatically around Khawa Karpo during the 20th century. Most increases have been small in area and located adjacent to villages. In many areas, especially on steep slopes where irrigation is unavailable, crop fields have actually been abandoned and have reverted to natural vegetation. Repeat photos show that this process of field abandonment started before 1950, but it probably increased rapidly with the advent of modern agriculture, government policies prohibiting fire, forest cutting, and steep land cultivation. Our research suggests that the threat of agricultural expansion has been overstated for Khawa Karpo, which still retains traditional Tibetan land management of crop rotations, fallows, backyard gardens, and orchards (see Tibetan Land Use, this chapter). However, the practice of cultivating traditional steep land crops, such as buckwheat, is declining.

Invasive Plant Species

Exotic species invading native habitats are a global threat to biodiversity and a major conservation issue in China. However, photo comparisons and field observations suggest that invasive plant species are not a major threat to terrestrial biodiversity in northwest Yunnan, unlike virtually every other temperate region of the world. One hypothesis to explain this phenomenon is that the high biodiversity of the area has limited the ability of non-native species to become established and to expand. Northwestern Yunnan may be an ideal location for further research into the relationship between native plant diversity and invading species.

VIEWING OLD PHOTOGRAPHS: TIBETAN ELDERS DISCUSS CHANGE

Tibetans were fascinated by photographs of the Khawa Karpo area from their youth. They sat around in enthusiastic groups to reminisce and discuss change. Some of the issues discussed by the elders confirm the visual results discussed previously, and some provide interpretations of the causes and effects of such changes.

Consistently and adamantly, elders emphasized land policy changes and tenure over the last 100 years. Landlord and monastic ownership prevalent in the early 1900s and before gave way to nationalization in the 1950s, collectivization in

the 1960s, the Cultural Revolution in the 1970s, decollectivization in the 1980s, and cultural and religious resurrection in the 1990s. Some changes that began in the 1950s continue today, such as construction of roads, hydroelectric power plants, irrigation infrastructure, and the introduction of crops (particularly commercial crops).

Afforestation was discussed by many village elders as being a result of recent government policies outlawing steep hillside agriculture and pasture burning. Both policies facilitate forest encroachment onto formerly agricultural lands. In fields on steep hillsides above the villages, older villagers recall cultivating buckwheat, hemp, beans, opium, and other crops seldom seen today. With the cessation of hillside agriculture these crops have disappeared from the area. Afforestation was bolstered by the Chinese government's recent "Grain-to-Green" plan (first implemented in 2000), which provides economic incentives to replace hillside agriculture with trees and grasslands. Where the government has paid villagers to convert cropland to forest, conversion has often taken the form of monoculture plantations that consist of non-native pine trees. As a result, despite increases in forest cover, older villagers in four out of six study sites reported having to travel farther now to gather forest resources than they did in their childhoods.

Suppression of pasture burning is also a reason that the treeline is extending upward into alpine meadows, additionally causing reduced pasture quantity and quality with an influx of fire-intolerant plant species that are unpalatable, indigestible, and/or poisonous. At the same time, all villagers surveyed reported an increase of livestock during the past century. As a result, diminished pasture quality due to overgrazing and an increased dependence on fodder were also reported.

Government programs to increase irrigation have had a large impact on crop and agricultural productivity. All but one of the villages surveyed used irrigation. However, landslides, disputes, and road construction have all disrupted irrigation and caused field abandonment in the recent past. In one village, a burgeoning commerce in rice cultivation was abandoned after the construction of a new road limited water supply; today rice is not found in the area. The government has actively promoted particular crops and tree planting at various times; today, propagation of commercial grapes in the irrigated valleys and reforestation on the hillsides are promoted.

As Tibetan land use is affected by both elevation and by roads (see Tibetan Land Use, this chapter), change is effected by these two variables as well. Road access affects land use and impels change through market incursion, and accompanies the spread of Han Chinese culture and government. Change in agricultural technology has particularly affected villages near roads. Chemical fertilizers and

◀ Tibetan elders view Joseph Rock photos, reminisce about their childhoods, and discuss change. Historic photos were of great use in participatory research of change. Photographs by Anthony Amend.

pesticides are employed. Plastic sheeting to suppress weeds was introduced in the early 1980s to increase yields and reduce fallow time for corn and potatoes. Agrochemical and technological inputs appear to be directly linked to agricultural intensification. Facilitated market access also results in a shift from a more subsistence-based economy to an economy increasingly based on cash. Villages with roads cultivate more crops for sale, and villagers engage in more wage labor outside the village. Several households with direct road access have purchased trucks in which commodities are transported for a fee. Relationships between roads and deforestation, which is important in many other studies, are less an issue in the Khawa Karpo area since roads follow the arid valleys that have never been forested.

Non-timber products have always played, and continue to play, a huge role in Tibetan livelihoods. Dechen was once a key stop along the major Sino-Burmese and Sino-Indian trading routes. Trade in caterpillar fungus (*Ophiocordyceps sinensis* [formerly *Cordyceps sinensis*]) as well other important medicinal plants was brisk at the time of the early plant explorers, and Kingdon-Ward in 1931 described the burgeoning trade in *Fritillaria cirrhosa*, whose bulb was "worth almost its weight in silver...[in] the seaport cities, Shanghai and Canton..." (Kingdon-Ward, 1990: 179). Non-timber products, many of which are small, light, and valuable, remain central to Tibetan cash income and livelihoods, regardless of the distance to the nearest road. However, the kind of species collected commercially has changed. The 1980s saw the beginning of commercial collection of matsutake mushrooms, an unknown phenomenon at the beginning of the century. Today, it is by far the most lucrative wild-gathered resource. Some villages are limiting use of oak (*Quercus*) forests, which once provided compost, fodder, and firewood, in order to manage a more productive habitat for matsutake mushrooms. Matsutake commoditization has changed land use in other ways too. Villages with high matsutake productivity now charge outsiders collection fees for harvest rights. Under the best of situations, land tenure is uncertain in China, but skyrocketing prices of matsutake and other non-timber products complicate land rights. Forest tenure implemented before the matsutake boom of the 1980s is sometimes at odds with the de facto and ambiguous tenure affecting non-timber products on the same land. We found differences of opinion concerning matsutake collection practices. Villagers' efforts to exclude "outsiders" from collecting have led to conflict near Khawa Karpo and elsewhere in the area.

As typical over the last half-century, big programs are afoot in China that are focused on development and economic triumph on a world stage. Land ownership is now changing in China with more tolerance for private property, but how new land tenure policies will affect Tibet is uncertain.

RECENT ECONOMIC DEVELOPMENT

The "Great Western Development Strategy" is a long-term, central government program aimed at raising economic standards in underdeveloped western China

to levels equivalent with those reached by eastern China during the last quarter-century. Yunnan Province is one of the poorest in China, and within Yunnan, the Diqing Tibetan Autonomous Prefecture, which includes the Khawa Karpo area, is the most impoverished. Poverty alleviation is the immediate goal of economic development, and the central government has slated Khawa Karpo for tourist development, providing large subsidies for infrastructural development.

Tourism

The most dramatic social and economic structural shift (from traditional Tibetan land use and trade to market-based development) in the history of Khawa Karpo is currently taking place and it revolves around tourism. Khawa Karpo has recently attracted national and international recognition as a major tourist destination because of its spectacular scenery and traditional Tibetan culture. Khawa Karpo was featured by the UNESCO World Heritage designation in 2003 of the Three Parallel Rivers of Yunnan Protected Areas for Northwest Yunnan. The area is also a featured site in the regional marketing effort to brand northwest Yunnan and adjacent areas of Sichuan and Tibet as "Shangri-La," a burgeoning tourist destination.

Khawa Karpo is rapidly becoming one of the major tourist centers in China. Dechen, which only opened for tourism in 1996, has had an astonishing increase in overnight visitor stays from 17,000 in 1996 to 145,000 in 2005 (Fig. 11). Tourism now accounts for only 6% of the county's gross domestic product, but it is planned to reach 12–15% of the gross domestic product in 2020 with almost a million overnight stays. Busloads of Chinese tourists with exacting demands for services and infrastructure are anticipated. Large hotel chains from Shanghai,

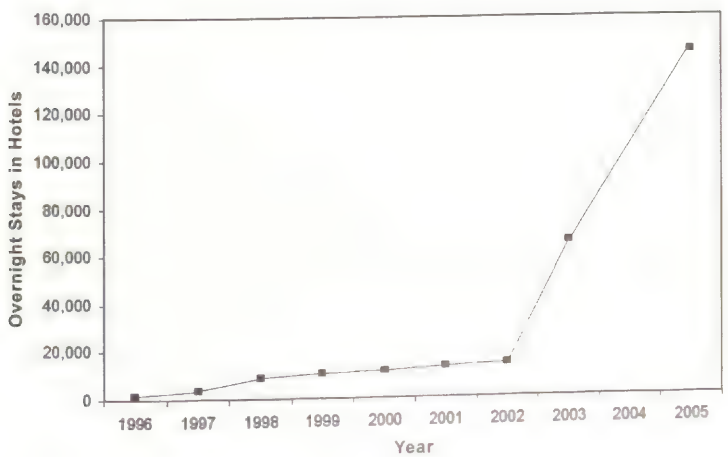


Figure 11. Tourism, which is supported by government policy, is increasing rapidly. Hotel stays in Dechen have increased since 1996.

Mingyong villagers welcoming tourists at the beginning of the recently upgraded trail to Mingyong Glacier and Taizi Temple. Photograph by John Sacklin, U.S. National Park Service.

Hong Kong, and Beijing are moving into the area. Tibetans are seen to benefit through the service and entertainment sectors, providing an unskilled workforce and traditional dancers, singers, and musicians. Trekking into remote Tibetan villages, which the first rugged tourists enjoyed, is unlikely to appeal to great multitudes of domestic tourists. Large, Swiss-style alpine gondolas are planned to transport tourists to sacred mountains and glaciers. The conflicts of these plans with traditional Tibetan sanctity and prohibition go seemingly unnoticed.

Infrastructure

Construction of infrastructure such as roads, dams, and power grids is central to the county's development plans. The government is committed to providing road access, television, telephone, and reliable electricity for every village. Spreading throughout the most remote areas, mountain roads with endless hairpin curves are being built on sheer precipices that drop a thousand meters to the rivers below. Pavement links the hinterlands to urban China and the global economy. Hydroelectric facilities are being upgraded and new dams are planned to link with the national power grid. Two new mines for copper and coal are recently

Until recently, northwestern Yunnan and the Khawa Karpo area had only been lightly developed, but this billboard is a sign of the times in Yunnan's provincial capitol of Kunming. The Great Western Development Initiative has resulted in an unprecedented amount of infrastructure construction. Photograph by Robert Moseley.

operating near Khawa Karpo, with more planned for the future. Infrastructure projects here generally fail to include environmental impact assessments, mitigation, or any assurance that local people will directly benefit.

CLIMATE CHANGE

The Earth's climate has always been changing; it has never been static. We now know, however, that climate is warming at rates and degrees unprecedented during the course of human existence, and the warming is largely due to greenhouse gas pollution from industrialized parts of the world. Although this pollution has its source far from Khawa Karpo, the impacts of a rapidly warming climate are being felt especially keenly in this remote area.

The Himalayas and the Tibetan Plateau are climate drivers for the world, affecting monsoons and ocean currents. The United Nations Intergovernmental Panel on Climate Change (IPCC Fourth Assessment Report, <http://www.ipcc.ch>) describes increases in temperature (5–6°C) and rainfall (20–30%) for the Himalayas that are exceeded only in the polar regions of the globe. As a climate driver, and with the dramatic increases of temperature and precipitation, the Himalayas and Tibetan Plateau are often called "The Third Pole." We cannot even estimate what these changes will mean to the rest of the world, but regionally, changes

could be devastating. The waters of the Three Rivers area where Khawa Karpo is located flow into the giant Mekong and are an integral part of what is called the "water tower of Asia." Over a billion people depend on water from the large rivers that flow from the greater Himalayan region. As glaciers melt and precipitation increases, ravishing floods result, which have killed many people in China and surrounding countries.

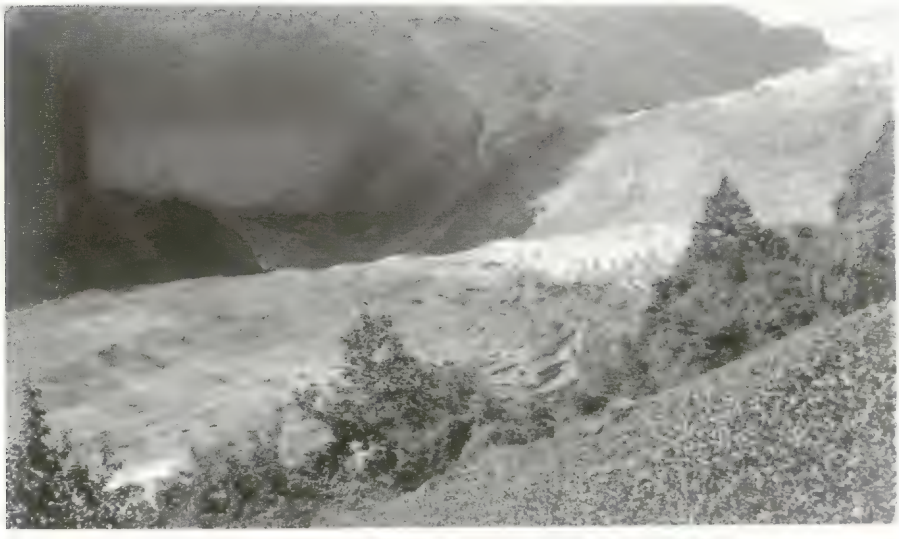
We have documented the effect of a rapidly warming climate on the glaciers, ecosystems, and Tibetan livelihoods of the Khawa Karpo area. Although more work needs to be done, we know that these changes have negative implications for both biodiversity and local livelihoods.

IMPACTS ON GLACIERS AND HIGH-ELEVATION ECOSYSTEMS

The easiest way to understand the climate changes taking place is to look at the historical evidence. The climate record of Dechen is available for the period 1954–2003. The mean annual temperature has been increasing since the late 1970s, and the temperature from 1982 to 2003 was 1.1°C higher than the previous period from 1960 to 1981 (Fig. 12). This temperature trend is not confined to

Figure 12. Climate data from 1957–2003 show mean annual temperatures are rising (from Dechen County meteorological station).

Mingyong Glacier is retreating at an accelerated rate in recent years. Little change in ice volume filling the valley is visible between 1913 and 1994, but considerable loss of ice and exposure of underlying bedrock took place between 1994 and 2004. *Top:* 1913. Photograph reproduced by permission of Frank Kingdon-Ward, Royal Geographical Society. *Middle:* 1994. Photograph by Fang Zhendong. *Bottom:* 2004. Photograph by Robert Moseley. ▶



one season, as both winter (December to February) and summer (June to August) temperatures have been rising. Records for China reveal that temperatures have increased rapidly since 1920, and the warming trend of 0.3°C/yr experienced in the last two decades of the 20th century is nearly double the global trend. Furthermore, the rate of temperature warming in Dechen of 0.6°C/yr was double the national average over the same period. Warming is similar in other parts of northwestern Yunnan (e.g., Zhongdian and Lijiang).

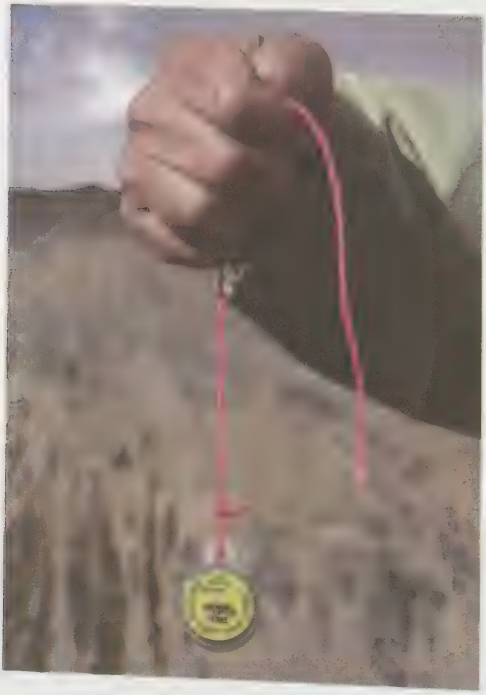
Glacial retreat on Mt. Khawa Karpo and the Baima Snow Mountains is startling. Comparisons of old and new photos of the glaciers of Khawa Karpo and the Baima Snow Mountains show a dramatic loss of ice. Our measurements of Mingyong Glacier indicated that the rate of this loss has actually increased during the last decade (Table 5). It is important to realize that people depend on water from spring melts that are now maximal, but these melts will decrease as the glaciers and snow disappear. In contrast, midsummer monsoons, which often produce severe flooding downstream, are predicted to increase dramatically. So, the availability of water downstream will become variable, oscillating between flood and dearth, making agriculture and human subsistence increasingly difficult.

The effect of a warming climate on species and ecosystems, however, is much harder to observe than the effect on glaciers. Probably the easiest place to directly observe the effect of warming on species is at the upper limit of tree growth in the mountains. We know from research in other alpine and arctic regions of the world that woody species, generally, respond to a warming climate by increasing in elevation and cover. The alpine treeline (~4000 m in the Himalaya), which is the natural boundary between forests below and alpine ecosystems above, is caused by temperatures too cold for tree growth. As expected, this thermal boundary of tree growth shifts as the climate warms and is easy to observe by comparing old photos with images from the present day. Although no photos of alpine treeline

Table 5. Rate of retreat (m/yr) of the toe of Mingyong Glacier. The rate during the 1850–1998 period is approximate, as the exact year that the glacier started retreating from its maximum length is unknown.

Time Period	Number of Years	Glacial Retreat (m)	Rate of Retreat (m/yr)
1850–1998	148	2300	15
1998–2002	4	80	20
2002–2004	2.5	110	44

◀ The alpine meadows at Baima Pass are changing to alpine shrublands, dominated by dwarf rhododendron. *Top*: 1923. Photograph reproduced by permission of National Geographic Stock, Dr. Joseph Rock. *Bottom*: 2003. Photograph by Robert Moseley. This scene is typical of alpine areas of the Khawa Karpo region where woody vegetation (trees and shrubs) is increasing at the expense of herbaceous vegetation.



exist in Khawa Karpo, we do have several from nearby Baima and Biluo Snow Mountains, east and south of Khawa Karpo, showing that forests have expanded upward into alpine meadows. At Baima Pass, the forests have increased 67 m in elevation in 80 years. Indeed, in Baima Pass, the photo comparisons show that the *Rhododendron* shrub communities have increased in cover and are crowding out the higher meadows.

Nonetheless, some plant communities are more threatened than others, and the alpine ecosystem, which is the most biodiverse, is perhaps most threatened by global warming. With global warming, all plant communities are moving further up the mountains. But what of the highest alpine plant communities that inhabit the tops of lower peaks (~5000 m); where do these communities go? If they are outcompeted by more rapidly growing vegetation and trees moving up the mountains, these slow-growing, slow-reproducing plants of the highest alpine regions could be ecologically pushed off the top of lower mountains. This is a global phenomenon in alpine environments that is being observed by the Global Observation Research Initiative in Alpine Environments (GLORIA), an international consortium centered in Vienna (see <http://www.gloria.ac.at>). We have joined GLORIA to see what effect global warming has on the alpine flora near Khawa Karpo and elsewhere in the Hengduan Mountains. Elsewhere in the world, in alpine areas experiencing less rapid climate change than the Himalayas, species are seen to be responding to warmer climates by rapidly extending their ranges to higher elevations. In particular, weedy species, those with high reproductive rates and great adaptability, move the quickest, threatening slow-growing endemic plants at high elevations that are already threatened. In the alpine areas around Khawa Karpo, we are particularly worried about species like the endemic snow lotus (*Saussurea laniceps*), which is extremely slow growing and already threatened by over-harvesting.

IMPACTS ON TIBETAN CULTURE AND LIVELIHOODS

In Tibetan areas, and particularly the Medicine Mountains (Menri) in which Khawa Karpo lies, the climate change threat to alpine habitats has not only dire ecological and evolutionary consequences, but also great cultural significance.

◀ The Global Observation Research Initiative in Alpine Environments (GLORIA) observes the migration of plant species due to climate change. *Top left:* Selection of appropriate mountain summit for GLORIA sampling. *Top right:* Sinking permanent markers for future resampling. *Middle left:* Intensive sampling of 1 m^2 plots subdivided into 10 × 10 cm squares in which plant species, frequencies, and cover are tallied. *Middle right:* Tibetan doctor (left) is interviewed by first author (right). *Bottom left:* Temperature data logger is buried 10 cm in center of 3 × 3 m quadrats. *Bottom right:* Team pressing plant voucher specimens in herders' hut at night. Photographs by Fang Zhendong.

Since many Tibetan medicines grow in high alpine areas, Tibetan culture and livelihoods are also threatened by global warming. Expanding our ethnobotany approach to conservation, we added investigations of indigenous knowledge of these threatened alpine plants to the standard GLORIA methodology. Again, research was done in collaboration with Tibetan doctors, who informed us about alpine plant use as well as the cultural significance of these sacred alpine environments. Although sacred status guards many alpine environments against commercial harvesting of medicinal plants and against overgrazing by yak herds, sacred space does not protect against global warming. Combating global warming will take international political will that has yet to emerge.

Although Tibetan people for the most part do not have access to information about the global nature of climate change, they notice changes occurring in their environment and are very concerned. All of our participatory rural appraisal techniques (photovoice, discussing old photos, and direct interviews) prompted local Tibetans to discuss climate change as they are experiencing it—increasing temperatures and rainfall with great fluctuations, unpredictable weather, melting glaciers, and crop and health problems.

Climate change and its effects on culture were themes that emerged from the villagers' and pilgrims' photos of the sacred glaciers and lakes in the photovoice study. They recounted that glacial retreat has been observed over a short period of time and that glacial lakes have newly formed. They are unsure of and unsettled by both the causes and implications of these changes. What does it mean that a sacred glacier is diminishing? What is the sacred nature of new lakes? To Tibetans, the cultural implications of global climate change are disquieting, even without understanding the processes or future repercussions.

When Tibetan elders discussed historical photos, they readily recognized that the sacred Mingyong Glacier descending from the summit of Khawa Karpo has been retreating. In fact, a local Buddhist monk reflected on this retreat and was concerned that it might be due to lack of religious devotion by himself and his fellow Buddhists, especially during the Cultural Revolution. As early as 1913, when the plant hunter Frank Kingdon-Ward visited the Mingyong Valley, villagers told him that 50 years earlier the glacier descended to nearly the edge of the village. Today, elders discussed shrub and treeline advance and the problems this causes for alpine grazing.

We systematically queried Tibetans from six villages near Khawa Karpo about climate change: what climate changes had they noticed, how do these changes impact their lives, and how do they interpret and evaluate these changes? The villagers related many personal perceptions and experiences. All villagers had observed some changes in climatic conditions. Quantitatively, we found a large degree of agreement about changes such as warming temperatures and glacial retreat. In contrast, there were much more divergent opinions regarding the impacts and causes of highly variable changes in their environment, such as

landslides and river levels. In many instances, people's observations of climatic change and its impacts depended on village elevation and tourism. Tibetans living at lower elevations (< 2500 m) were most negatively affected by changes in the climate (including agricultural pests, crop disease and failure, and health problems, such as rapid food spoilage and more vector-borne disease, etc.). Tibetans living at higher elevations (> 3000 m) reported both negative and positive impacts (e.g., warmer weather with less wood needed for heating and making it more pleasant for taking baths in their icy rivers). Villages that depend on tourism are worried about climate change because the tourists come to see glaciers and snow-covered mountains that are melting.

Tibetans queried near Khawa Karpo had no outside information about global climate change and regarded changes as local phenomena with local causes. They gave both physical and spiritual explanations for climate change. For example, they suggested that adverse weather expressed the wrath of mountain gods angry for their lack of devotion, and that if the snows disappear entirely, their gods will have deserted them. Climate change is thus imbued with moral and religious significance. As many sacred landscape features in the area are affected by climatic change (e.g., glaciers, waterfalls, rivers, and snow-capped mountains), Tibetans are faced not only with adapting, but also with anxiety about the moral and spiritual implications of change.

Left: With climate change, Tibetans are praying frequently to Lhu, the water dragon believed to influence rain and health. *Right:* 85-year-old Tibetan woman with her great-grandson says, "I am worried that the Earth will be destroyed if the snow disappears completely." Photographs by Anja Byg.

Tibetan Cosmology of Climate Change

As in all cultures, weather and climate portend more than crop yield or sufficient drinking water and can symbolize states of being. For striking examples, refer to Shakespeare or the Bible. Tibet is no different and weather imagery is prevalent in Tibetan Buddhism. The thunder symbol and thunder gongs are icons in Tibetan prayer, clouds are omnipresent in Tibetan religious art, and Tibetan gods and goddesses ride lightning bolts and present rainbows. Beyond merely uncovering knowledge and attitudes about the effects of climate change on health, agriculture, and material welfare, interviews with Tibetan religious leaders, medical practitioners, scientists, and conservationists also reveal Tibetan cosmology.

Contemporary Tibetan cosmology of climate change is a combination of formal Tibetan Buddhism, pre-Buddhist shamanism, and thriving contemporary beliefs that are dynamic and variable. Climate change is basic to Tibetan Buddhist cosmology in that four major changes have taken place and will take place: (1) massive earthquakes shook and split the earth at the time humans (or life) first occurred; (2) a great flood covered the earth in the past; (3) in the future, fire will consume Mt. Shumi, the center of the material world; and (4) a colossal wind storm will extinguish the universe. Present global warming, glacial melting, flooding, and other changes seem to be minor occurrences among these great devastations.

Weather resides both in the spiritual and material worlds: pre-Buddhist dragons control the weather, Dhro is a flying sky dragon whose voice is thunder, and Lhu is a subterranean water spirit that lives in high alpine sacred lakes, in water creatures, and sometimes under old trees (dragon trees). Offerings and prayers are ceremonially presented to Lhu in order to control weather (especially rain) and disease, which often are interconnected.

Formal Tibetan Buddhism, however, differs from these dragon beliefs, offering a parallel and potentially compatible pathway: good deeds, thoughts, and prayers will lead to good weather, health, and livelihood, as well as release from material suffering. Pollution, both spiritual and material, will bring adverse climate and weather and other suffering to our tenuous existence.

The Tibetan calendar predicts the weather and agricultural cycles, based on a combination of Tibetan astrology and pragmatic consultations with experienced farmers subscribing to traditional knowledge and careful observation. According to the five monks in Lhasa who carry on this tradition (in a somewhat secularized form), planting dates are becoming earlier and earlier, and of the three favorable dates provided each year for planting, the earliest dates have been the best.

Common explanations for weather changes include too little faith and prayer, too many trees cut, too many people (especially non-Tibetan, non-Buddhist), and water pollution. Finally, it is apparent that Tibetans envision climate change as an integration of the moral, spiritual, emotional, and material universe, which is far more profound than our climate scientists or popular activists consider.

▲ As the climate has become warmer, cabernet sauvignon grapes have been established in the Lancang River valley. Grapes growing in hot, dry, stony fields of the Lancang River valley.

◀ Award-winning ice wine from the Lancang Valley. Photographs by Jan Salick.

Adapting to and Mitigating Climate Change

Tibetans have much to teach the world with their ingenuity and ways of adapting to and mitigating climate change. In agriculture, traditional crops are being augmented or replaced with new ones that are more adapted to the new climatic regime. In the highlands, vegetables, winter wheat and barley, and fruit and nut trees previously ill-adapted to the cold climate are beginning to be cultivated. In the lower areas (~2000 m) rice and cash crops that previously would not produce a viable harvest are grown. The biggest success story for adaptation to climate change is introduced grapes, which are now grown in the hot, dry river valleys. French missionaries introduced grapes in the late 19th century and grew them only in the artificially protected microclimate of their high-walled church cloister, carefully tending them to produce wine for the priests. To this day, these grapes survive in the courtyard behind the Catholic church in Cizhong, Dechen County. Now, with warming climate, these same cabernet sauvignon vines can be grown throughout much of the Lancang Valley. Grapes are harvested in quantities and marketed for high profit, so much so that whole villages are forsaking traditional agriculture for the lucrative grape. Tibetans have begun to make wine, and large wineries have moved into the Khawa Karpo area. Again, success has not stopped innovation, and Tibetans have recently experimented with making ice wine, winning second prize at an international wine competition. The Tibetan climate provides the perfect climate for this dessert wine, which needs a rapid freeze just after ripening. Most recently, Chinese government policy is now promoting grape cultivation, and government wine factories are taking the initiative from local Tibetan entrepreneurs.

Through their land management practices, Tibetans sequester large amounts of carbon. Human-induced carbon dioxide (CO^2) levels in the atmosphere are rising to unprecedented levels and constitute an important component in greenhouse gases. When CO^2 is removed from the atmosphere by trees, plants, and crops through photosynthesis and stored as carbon in biomass and soils, carbon is sequestered. Thus, Tibetans are mitigating climate change by sequestering carbon both in vegetation and in soils. As discussed previously, there is more forest and shrubland near Khawa Karpo than at any time in the last 100 years. Tibetan sacred space also protects natural vegetation that holds onto carbon while much of the rest of the world is undergoing deforestation. Tibetans also incorporate huge amounts of vegetation and litter into their soils to increase organic matter and reduce erosion on their steep slopes. This soil organic matter also sequesters carbon that in turn mitigates climate change; there is probably as much carbon sequestered in soils as in forests. Thus, Tibetans are providing ecosystem services through carbon sequestration that counteract climate change and benefit the whole world.

CHAPTER 3

CONSERVATION PRIORITIES

Jan Salick and Robert K. Moseley

IN ORDER TO apply our biological and social research to conservation, we review present conservation strategies and make suggestions for the future. First, we review existing conservation programs and our current knowledge, making suggestions for improvement. Second, we identify additions to the current conservation programs that would improve biological and cultural diversity conservation at Khawa Karpo. We cannot stress enough, however, that both scientific and indigenous knowledge are dynamic and that conservation managers, be they Tibetan village leaders or Chinese government technicians, must adapt their management to changing information and conditions.

CONSERVATION OF BIOLOGICAL AND CULTURAL DIVERSITY

Conservation programs at Khawa Karpo must include plans for species, habitats, ecosystems, gradients, and landscapes of priority, as well as support for local people, cultural traditions, and language. Successful conservation integrates biological and cultural domains. For example, within the biological domain, species are found in a complex mosaic of environments, ranging from warm, wet ecosystems in the south to dry, cold ecosystems in the north. These environments have undergone centuries of human use and management by Tibetans creating and maintaining aspects of this mosaic. It is the interaction of ecological patterns and human land use patterns that makes Khawa Karpo tremendously rich in biological and cultural diversity. The message of our collaborating doctors is an important one to remember—Tibetan people value the Khawa Karpo landscape as a whole, and not one habitat or organism is important in isolation. Therefore,

conservation of the full environmental landscape with Tibetan traditional land use should be the long-term conservation goal for Khawa Karpo.

Nonetheless, in the short term, our conservation priorities for Khawa Karpo conservation should include: (1) species, habitats, and cultural elements that are most threatened, and (2) habitats that harbor many threatened species or provide important ecological services to human communities, such as Tibetan medicinal plants and alpine meadows.

Additionally, lists of threatened species and useful species focus conservation efforts toward maintaining biodiversity (Table 4). Cultural priorities for Khawa Karpo conservation should incorporate (1) local Tibetan people and their traditional ecological knowledge, (2) Tibetan traditional land use and management, and (3) Tibetan sacred space.

CURRENT CONSERVATION APPROACHES

A single approach to conservation will never suffice for all places, all people, or all organisms. For conservation to succeed we must use multiple, context-specific strategies. In fact, there are a wide variety of conservation approaches already being employed at Khawa Karpo, both locally and internationally.

INCORPORATING LOCAL PEOPLE AND TRADITIONAL ECOLOGICAL KNOWLEDGE

For conservation and sustainable development to succeed, grassroots support and initiatives must be integrated with policy. Indigenous and local people as the foundation and initiators of conservation and sustainable development have proven effective. Through our research and conservation efforts, we have been working to develop a process through which local people, professionals, academics, and policy implementers can be drawn together and empowered to achieve conservation and sustainable development based on traditional ecological knowledge.

Sacred Space of Tibetan Buddhism

The sacred geography created by the spiritual traditions of Tibetan Buddhists represents an enormous biological and cultural conservation opportunity, along with the more transcendent spiritual significance, all of which must be maintained and strengthened. For many centuries, Khawa Karpo has been worshiped as one of the great sacred mountains by all Tibetans. Although pilgrims come from throughout the Tibetan world to gain merit, it is the local people who are the day-to-day stewards of this landscape.

Luckily, there is growing recognition of the importance of Tibetan mountain worship to culture and nature conservation. In 1983, the religious-based *rigua* zoning system (see Chapter 2, Sacred Space) was incorporated into the Dechen

County natural resource management regulations as the boundary between the protected forests of the state and the traditional natural resource use areas of local villages. More recently, the county government has vigorously sought to ban mountaineering on all peaks in the range, especially Khawa Karpo. In 2001, the county successfully lobbied the Chinese leadership in Beijing to ban climbing on the peak. Finally, we mapped the sacred geography with the Khawa Karpo Cultural Association, a local non-governmental organization (see Chapter 2, Sacred Geography), with the goal of incorporating Tibetan sacred space into all conservation approaches. The Yunnan Forestry Bureau has also begun to recognize that sacred natural sites conserve biodiversity. An international Himalayan sacred mountains conservation initiative could support local and county programs and provide migratory corridors for plants and animals threatened by overharvesting and climate change.

In a larger sense, cultural survival is requisite to conservation; to sustain the traditional land management, conservation ethic, and zoning system that conserve biodiversity, Tibetan culture must be maintained. The Khawa Karpo Culture Association and local government are active in Tibetan cultural conservation. Nonetheless, international support with experience in other parts of the world would be useful in establishing goals and orienting efforts.

Community Conservation Management

Traditional ecological knowledge provides a solid foundation for conservation and sustainable development. Villages in the Khawa Karpo area have an ancient system of natural resource management, use, and regulation. Their goal is sustainable use of natural resources within the village boundaries for agriculture, grazing, harvesting wood used for fuel and construction, and collecting non-timber products, such as Tibetan medicinal plants, edible mushrooms, and firewood. While maintaining tradition, village regulations are innovative, vary with new information and situations, and are tailored to the ecological setting of a particular village. This is the very essence of dynamic and evolving traditional ecological knowledge.

Within this context, we have worked with villages near Khawa Karpo to support sustainable natural resource management based on traditional ecological knowledge, including sacred space, matsutake mushroom harvesting, Tibetan medicinal plant collection, grazing, sacred and walnut tree planting, woodcutting, environmental education, and eco- and cultural tourism. In the process of securing cultural values, traditional knowledge, and local input, we worked to incorporate local conservation management with compatible economic development. We have supported village management of rapidly expanding commercial enterprises, such as tourism and mushroom marketing, by incorporating complementary scientific knowledge with traditional ecological knowledge into village regulations. Threatened traditional crops, such as bitter buckwheat and

iron walnut, might also be supported through traditional ecological knowledge at the village level, if contradictory government policy can be modified and adapted for local situations.

We found time and again that Tibetan village doctors offer tremendous potential as conservation partners (see Chapter 2, Ethnobotany: Interweaving Culture and Nature). All Tibetan doctors are trained in indigenous plant biology, identification, and pharmacology; they recognize plants in their natural habitats, know how and where they grow, and realize threats to valuable medicinal resources. Tibetan doctors are trained plant experts who live in the villages and interact daily with local people, by whom they are esteemed and revered. They are among some of the most powerful advocates and leaders for which conservation could hope. However, Tibetan doctors today, and more generally, village-based medical practices, face serious obstacles, such as qualifying for official recognition and financial support, continuing education, and recruiting a new generation of doctors. We have given support to a few local Tibetan doctors by assisting in their recognition by local government and by building village clinics for them. Human health and conservation would both benefit from radically increased support for traditional Tibetan medicine as practiced by village doctors.

CHINESE GOVERNMENT PROGRAMS

In China, the central government has established and funded many large conservation programs, several of which affect conservation of biological and cultural diversity at Khawa Karpo. They are administered by county agencies, such as the bureaus of Health, Education, Forestry, and Animal Husbandry, which are required to follow top-down directives and, with some exceptions, often have little discretion concerning local implementation.

Natural Forest Protection Program

Established following a regional ban on commercial logging in 1998, this program was created to restore logged and degraded forest land. Although there has been little commercial logging at Khawa Karpo, the entire area is included in the program. The main strategy implemented by Dechen County involves mountain closures that prohibit wood harvest in degraded forests and woodlands close to some villages in the arid Lancang River valley.

Grain-to-Green Program

Although Khawa Karpo has not undergone the same amounts of deforestation as other parts of China, the Grain-to-Green Program, begun in 2000, converts steep-

sloped crop fields to forest in an effort to reduce erosion and flooding. At Khawa Karpo, we found that many steep crop fields were abandoned during the 20th century and are not a significant threat to environmental quality (see Chapter 2, Repeat Photography). Biodiversity has actually increased through natural regeneration following abandonment. Nevertheless, over 350 ha of croplands have recently been "reforested" (often in areas never historically forested) around Khawa Karpo, resulting in loss of high-elevation fields used for traditional Tibetan crops such as buckwheat (see Chapter 2, Viewing Old Photographs). In addition, present models show that increased precipitation runoff in the Himalayas is due to climate change rather than deforestation. When possible, Tibetan villagers often choose to reforest with traditional and productive tree crops, such as walnut, or with Tibetan sacred and drought-resistant trees, such as incense cedar. We have supported both of these options in preference to government-donated exotic tree species.

Rural Alternative Energy Program

This program is squarely focused on reducing the threat to forests posed by village reliance on firewood as the primary energy source. It began at Khawa Karpo in 2001 with the goal of forest conservation. Initially, the program provided alternative "biogas" energy, gas produced by the biological breakdown of human and animal waste into methane for cooking and light. It was later expanded to include solar power, which works well for heating water in local Tibetan villages. Energy-efficient stoves were also introduced in the area. This comprehensive strategy has installed several thousand units in households and schools near Khawa Karpo.

As the alternative energy program was being implemented, four lines of information emerged that compel adjustment of the program. First, it was found by other research that handling human and animal waste is counter to local Tibetan religious sensibility, and burning it constitutes spiritual pollution. Although no villagers objected initially, many biogas stoves were not used, and it became clear that the cultural taboo constrained this form of alternative energy. In contrast, solar energy and more efficient stoves were enthusiastically received. Second, we found that the unsustainability of past firewood use by local people had been overstated in research that only looked at wood consumption data and not tree growth. To appropriately assess current sustainability of firewood collection both Tibetan consumption and forest production must be analyzed. Third, conversion of manure to methane is hampered by the low temperatures of the high-elevation villages at Khawa Karpo.

Wildlife Conservation

Prior to the 1950s, Tibetan beliefs only allowed hunting in well-defined hunting zones below the *rigua* and outside of village areas. After 1950, religious suppres-

sion and village governance caused hunting to increase dramatically and wildlife populations to plummet. Since the early 1990s, hunting has been banned by the government, and populations of many wildlife species have begun to rebound. Some animals, such as gray wolf (*Canis lupus*), black bear (*Ursus thibetanus*), and sambar deer (*Rusa unicolor*), have increased so much that they are now causing economic losses to crops and livestock, creating negative feelings among villagers for any conservation activity. Efforts to protect populations of threatened wildlife such as big cats and ungulates (Table 3) will require support from local villagers who disagree with the hunting ban but support traditional Tibetan hunting zones.

An alternative to the hunting ban would be the re-establishment of traditional hunting limitations through community conservation. Since there is little enforcement capacity and a complete lack of credible population data from which to estimate sustainable harvests, hunting regulations to control populations of abundant species are impractical. Our attempt to estimate population levels of important wildlife species is a meager first step toward credible wildlife management (see Chapter 2, Fauna). Government compensation for economic losses due to wildlife has been proposed, but seldom realized, and is fraught with problems elsewhere in the world, including financial unsustainability.

Grazing Management

In 2002, the central government launched a nationwide grazing land conservation program known as "Grazing-to-Grassland." The program apportions pastureland into three management categories: no grazing, rotational grazing, and seasonal grazing. Near Khawa Karpo, the county identified 100,000 ha of traditional grazing land of which a third has grazing banned. Alpine meadows (summer pastures) and arid shrublands (winter pastures) are the two ecosystems most affected by this program, putting a tremendous burden on local Tibetans. Additionally, there was little scientific basis for how these areas were selected and managed and little understanding or acceptance of the program by traditional Tibetan grazers. Instead of targeting a specific number of hectares for land reclamation, we recommend redefining program goals away from an emphasis on pasture improvement, increased productivity, and stocking toward Tibetan traditional management practices of grazing lands.

Health and Traditional Medicine

Tibetan villages near Khawa Karpo are very interested in promoting both traditional Tibetan medicine and community-based health clinics. Such clinics are particularly important in remote areas where state health clinics are inaccessible. At present, Tibetan traditional medicine is recognized by the government only

if it originates from Lhasa. In the border regions of Tibet, such as Khawa Karpo, Lhasa has little influence outside of administrative towns and cities. Nonetheless, local Tibetan traditions in medicine and other customs predominate in rural areas where medical facilities are least available. We have supported local Tibetan medical traditions by building Tibetan health clinics to provide health care while simultaneously preserving local traditional knowledge of medicinal plants. For the traditional health care system to service local villages, we recommend that young doctors be trained both in local Tibetan medical practices as well as in Lhasa.

Education

Government education policy is attempting to abandon the system of "One School/One Teacher" (i.e., small rural schools) in favor of large, centralized schools with multiple teachers and subject specialization. However, in remote areas with indigenous languages, it is advantageous to provide small children with basic schooling near their homes. These small primary schools can offer a linguistic and cultural transition while teaching basic literary skills, potentially in both Chinese and indigenous languages. Once children are older and have basic reading skills, they can progress to larger and more distant schools. Other studies have shown that children learn their indigenous culture and traditional ecological knowledge at home in the early years. We have supported construction of village schools, which we hope will support Tibetan cultural traditions.

UNITED NATIONS WORLD HERITAGE SITE

In July 2003, the United Nations World Heritage Committee approved the Three Parallel Rivers of Yunnan Protected Areas as a World Heritage Site. This site covers a large portion of northwestern Yunnan, with Khawa Karpo featured as one of eight areas designated with exceptional natural and scenic value. Various governmental efforts focus on conservation and development but also prominently promote tourism for the Khawa Karpo area.

Conservation management of this site has been problematic since its inception because of contradictory local, national, and international goals. The frenzied rush for tourism and other infrastructural development, especially hydroelectric dams, is widely recognized to undermine World Heritage values. There are many issues yet to be addressed by the World Heritage Site that we repeatedly emphasize here. We strongly encourage local Tibetan participation in conservation and development planning and management. We advocate the application of traditional ecological knowledge to build livelihood options that integrate local economics, cultural survival, and ecology within conservation and development.

FUTURE NEEDS FOR CONSERVATION OF BIOLOGICAL AND CULTURAL DIVERSITY

EMPOWERING LOCAL PEOPLE AND INCORPORATING TRADITIONAL ECOLOGICAL KNOWLEDGE

Although we include local people and traditional knowledge in developing and implementing all our conservation programs, this aspect needs continual reinforcement in China where central government planning and implementation dominates. Full respect for cultural diversity, different perspectives, and traditional ecological knowledge must be encouraged. Our commitment to developing conservation approaches that incorporate local people and their traditional natural resource management and conservation practices is based on three objectives: empowering local people, traditional ecological knowledge, and rapid and culturally appropriate implementation.

Empowering Local People

Conservation programs that involuntarily remove, displace, or disenfranchise local people are both inhumane and wholly unsustainable. In contrast, sustainable conservation programs are created by empowering local people and incorporating them at all stages of conception, planning, funding, implementation, and evaluation. Including education, health, and sustainable development programs within conservation further benefits local people and ultimately enlists support for conservation. Although community-based conservation programs have sometimes been challenged, these approaches are far more preferred by local people than top-down models.

Traditional Ecological Knowledge

For millennia, local people have developed empirical knowledge of their environment along with management and conservation traditions. Traditional knowledge, management, and conservation practices have been continually tested and improved. Basing conservation programs on this traditional ecological knowledge not only takes advantage of thousands of years of experience, but also supports culturally appropriate perspectives and practices within conservation programs.

Rapid and Culturally Appropriate Implementation

Traditional management and conservation are already in place and functioning; with support, they can be reinforced and strengthened in a very short period of time. This is preferable to new, foreign, and potentially disruptive programs from the top down that take time, education, and long-term support. An example of

effective and timely employment of traditional ecological knowledge in Khawa Karpo conservation is support of Tibetan sacred space.

PLANT CONSERVATION

Although we recognize two groups of plants as priorities for conservation—endangered plants and threatened useful plants (see Conservation of Biological and Cultural Diversity, this chapter)—little research or conservation is currently being done for either. We recommend that programs be developed for these two groups: rare species vulnerable to extirpation (see Chapter 2, Flora) and useful plants commercially exploited in regional, national, and/or global markets (see Chapter 2, Threatened Useful Plant Species). While there is some overlap between them, threats and strategies needed to conserve the two groups are different.

Rare Plants

We consider four plant species to be in danger of local extirpation at Khawa Karpo or even extinction throughout their range. Three species are classified under Chinese law as endangered due to human exploitation or inherent rarity: *Pseudotsuga forrestii*, *Neopicrorhiza scrophulariiflora*, and *Kingdonia uniflora*. The fourth species, the orchid *Cymbidium tortisepalum*, is not covered by Chinese law (although recognized by the Convention on International Trade in Endangered Species of Wild Fauna and Flora), but it is endemic to northwestern Yunnan and is heavily exploited for the horticultural trade. These four plants range from diminutive herbs to large trees and each has different threats that make them vulnerable. Therefore, each species will require different research and conservation strategies appropriate to its unique natural history traits, habitat requirements, and threats to population viability.

Commercially Exploited Medicinal Plants

Economic development through commercialization of medicinal and other useful plants needs to proceed with caution. Chinese policy assumes that wild medicinal plant populations will never be depleted by intense commercial exploitation and that they will continue to provide a steady supply of material and income to collectors, processors, and marketers. This is a dangerous misconception that threatens both native biodiversity and local people depending upon these plants for income. Worldwide, sustainable approaches to commercialization of medicinal plant harvesting are needed to ensure the long-term biological survival of threatened medicinal plant species and the cultural and economic survival of traditional medicine. In Tibet and at Khawa Karpo, sustainable harvesting must supersede

commercialization of Tibetan medicine if these important plant resources and the associated traditional knowledge and culture are to be conserved.

Our research on snow lotus (*Saussurea laniceps* and *S. medusa*) is illustrative of a progressive approach to research on threatened medicinal plants, although subsequent conservation action has been slow to develop. First, we enlisted Tibetan doctors and botanists to target threatened useful plants and combined their evaluations to define our research agenda (including snow lotus as potentially threatened medicinal plants). Second, we historically mapped plant distributions and measured morphological characteristics based on herbarium specimens and compared these to their present-day field conditions (thereby identifying overharvesting of *S. laniceps* as a major threat). Third, we started long-term, detailed monitoring of snow lotus populations by which we constructed population ecology matrix models to estimate sustainable harvests. We also modeled the effects of changing harvest patterns as the increasingly rare *S. laniceps* is replaced in the market by the previously common and unthreatened *S. medusa*. Fourth, we found the basic natural history and pollination ecology of snow lotus to be important for its conservation: limited pollination of *S. medusa* exacerbated increasing harvest pressure (whereby we identified *S. medusa* also as potentially threatened). Finally, through the insight of local Tibetan doctors and our own research on sacred sites, we identified sacred space above the *rigua* to both protect extant snow lotus populations and limit commercial harvesting.

Snow lotus are unique and distinctive Tibetan medicinal plants from the highest alpine cliffs and rocky scree, making them ideal emblematic plants for Tibetan conservation. However, no government or non-governmental conservation organization has adopted *Saussurea laniceps* as an emblematic species, and we depend on Tibetan traditional ecological knowledge to protect these valuable medicinal plants.

We recommend a combination of scientific and traditional ecological knowledge evaluation, background herbarium work supported by field studies, population modeling to estimate sustainable harvests, basic biology to assure appropriate parameterization, market studies to estimate economic trends, and a return to combining science and traditional ecological knowledge in developing appropriate conservation strategies. Vital to success is governmental recognition of the threats posed by commercial collection and of appropriate conservation measures for medicinal plants.

RIVERS OF KHAWA KARPO

Clean, free-flowing water sustains both natural and human communities near Khawa Karpo, downstream along the mighty Mekong River, and along the four great rivers of the surrounding areas. Yet we know little about aquatic species and hydrologic processes near Khawa Karpo. Culturally, we know little about

Tibetan perceptions or use of rivers, which are traditionally influenced by sanctity and water burials. In other parts of the Himalayas, climate change is drastically affecting water resources, but we have little information from Khawa Karpo. Both ecological and cultural studies of water resources are needed for the Khawa Karpo area from which flow the waters of Indo-China.

CORRIDORS FOR WILDLIFE AND TRADITIONAL TRADE

It is important to remember that Khawa Karpo, though remote, is not isolated; it is part of a larger ecological, cultural, and economic region encompassing the Dulong, Nu, Lancang and Jinsha gorges, the Himalayan mountains, and the Tibetan plateau. For wildlife, particularly large cats and ungulates, links between Khawa Karpo and other conservation areas in this region are critical (see Chapter 2, Fauna). For people, the traditional Tea and Horse trading routes interconnected cultures and economics of Indo-China and Tibet. Centralization of commerce through large Chinese cities destabilizes these traditional cultural and economic links. Currently, there is little knowledge about ecological, cultural, and economic linkages. A future priority should be the design and conservation of wildlife corridors, especially east to Baimaxueshan Nature Reserve and west to Gaoligongshan Nature Reserve, Tibet, and the Himalayas as a whole. Equally important is documenting and facilitating cultural and economic networks among Tibetans and other indigenous peoples to support innovation and adaptation based on traditional ecological knowledge. A Himalayan corridor based on sacred mountains could be the basis of regional conservation.

ALPINE ECOSYSTEM

Yunnan, like many areas of the world, has made forest ecosystems the primary target for conservation investment despite the contributions made by nonforest ecosystems to biodiversity and human well-being. Throughout northwest Yunnan, and especially around Khawa Karpo, we have documented the extraordinary contribution of alpine ecosystems to biodiversity (see Chapter 2, Vegetation and Flora) and to Tibetan culture and livelihood (see Chapter 2, Tibetan Land Use). In addition, there is ample evidence of serious short- and long-term threats to the alpine ecosystem that jeopardize biodiversity, culture, and livelihoods, including unsustainable harvests of useful plant and mushroom species (see Chapter 2, Threatened Useful Plant Species), rapidly warming climate (see Chapter 2, Climate Change), overgrazing (see Chapter 2, Viewing Old Photographs), and government regulations (see Chapter 2, Recent Economic Development). Similar misplaced emphases on forest conservation at the expense of the alpine ecosystem have been documented elsewhere in the Himalayas.

LANDSCAPE CONSERVATION

While we have often prioritized particular plant and animal species, ecosystems, or social processes for conservation, we would like to recognize and clearly state that it is the complete natural environment and the people with their traditional culture that make Khawa Karpo the extraordinary place it is. Many conservation programs target only specific forests, farmlands, wildlife species, or rare plants. While these approaches are appropriate in some cases—particularly for individual, threatened species—approaches that integrate conservation management across the landscape will be the most effective in the long run. This is particularly true near Khawa Karpo where local Tibetan doctors stress the importance of the landscape for their livelihoods and cultural integrity.

CLIMATE CHANGE

We have documented that a rapidly warming climate is affecting Minyong Glacier and other ecosystems of Khawa Karpo (see Chapter 2, Climate Change). We have also documented that the resulting upward migration of trees, shrubs, and lower-elevation herbs into alpine meadows, after initially and temporarily increasing plant diversity, will then begin to effect a slow and inexorable loss of biodiversity (see Chapter 2, Gradient Analysis). Climate changes are already negatively affecting Tibetan livelihoods through heat, drought, or increased rainfall (depending on the area), crop failures, pests, diseases, and food putrefaction, and it will only get worse (see Chapter 2, Climate Change). Furthermore, the Himalayas and the Tibetan Plateau are climate drivers for the whole world, making these changes of global significance.

Sadly, the global cause of climate change is misunderstood by local Tibetans. For example, rapid retreat of the sacred Mingyong Glacier is causing angst among local Buddhists who blame themselves and tourists for spiritual as well as environmental pollution (see Chapter 2, Viewing Old Photographs). A major effort is needed to bring local Tibetans together with scientists, policy-makers, and conservationists (both local and international) to address adaptation to and mitigation of inevitable global change. We must support all these parties to discover both appropriate natural and socio-cultural resilience to abrupt climate change. We must concentrate efforts on the effects and responses to climate change that will so drastically affect Tibet and Tibetan people previously adapted to the Himalayan mountains and plateaus. Indigenous peoples, including Tibetans, must be integrated into international policies for both biodiversity conservation and climate change.

CONCLUSION

Although these conservation recommendations address issues that we identify today, the future will undoubtedly bring new information and priorities. The vital

objectives of effective conservation are to incorporate flexibility and responsiveness to dynamic change, and to fully integrate local Tibetan participation in conservation and development. Our hope is that future perspectives and approaches for conservation of Khawa Karpo can be developed from the foundation that we offer here—and more importantly, from the foundation offered by local Tibetans with their traditional ecological knowledge.

Tashi delay!

APPENDIX 1

VEGETATION TYPES

Ou Xiaokun

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THE VEGETATION CLASSIFICATION hierarchy for Khawa Karpo follows *The Vegetation of Yunnan* by Wu et al. (1987). Yunnan University scientists collected vegetation composition and cover data using traditional vegetation community sampling in the field, supported by spatial mapping techniques (GPS, geographic information systems, and remote sensing) in the laboratory (Ou et al. 2002). Further descriptions and data on community structure, species composition, and environmental relationships of the types can be found in Wu (2003) and Anderson et al. (2005). Mapping unit (MU) codes from the Anderson et al. (2005) map are listed in parentheses with corresponding vegetation descriptions. In addition to the vegetation types, Ou et al. (2002) identified three unvegetated landcover types in the Khawa Karpo area: (1) glaciers and permanent snow, (2) rock, and (3) open water of the Lancang River.

The Khawa Karpo area includes 10 vegetation types (nine natural and one anthropogenic). These nine natural vegetation types comprise 27 vegetation communities. Descriptions of the vegetation types and communities are given here.

VEGETATION TYPES AND CORRESPONDING COMMUNITIES IN THE KHAWA KARPO AREA

Subtropical evergreen broadleaf forest

Quercus acrodonta community

Sclerophyllous broadleaf forest

Quercus aquifolioides community

Quercus aquifolioides/Rhododendron decorum community

Deciduous broadleaf forest

Hippophae rhamnoides community

Betula spp., *Acer* spp., and *Sorbus* spp. community

Riparian forest

Amygdalus mira community

Salix luctuosa and *Zanthoxylum simulans* community

Populus haoana community

Mixed needle and broadleaf forest

Pseudotsuga forrestii, *Corylus chinensis*, and *Betula* spp. community

Taxus wallichiana and *Photinia serratifolia* community

Warm needleleaf forest

Pinus armandii forest

Platycladus orientalis forest

Cupressus forest

Cold temperate needleleaf forest

Pinus densata forest

Picea spp. forest

Abies georgei forest

Larix speciosa forest

Shrublands

Cold temperate shrubs

Rhododendron beesianum community

Rhododendron phaeochrysum community

Alpine *Salix* shrubs community

Juniperus squamata community

Hot temperate shrublands

Sophora davidii and *Incarvillea arguta* community

Elsholtzia capituligera community

Excoecaria acerifolia and *Ligustrum lucidum* community

Meadows

Subalpine meadows

Alpine meadows

Alpine scree

Anthropogenic

Anthropogenic community

Subtropical evergreen broadleaf forest

This is a typical subtropical vegetation type for most of the Yunnan Plateau, but in the Khawa Karpo Mountain area this vegetation type is rare. Of the sampled areas, only one community type fell under this form of vegetation.

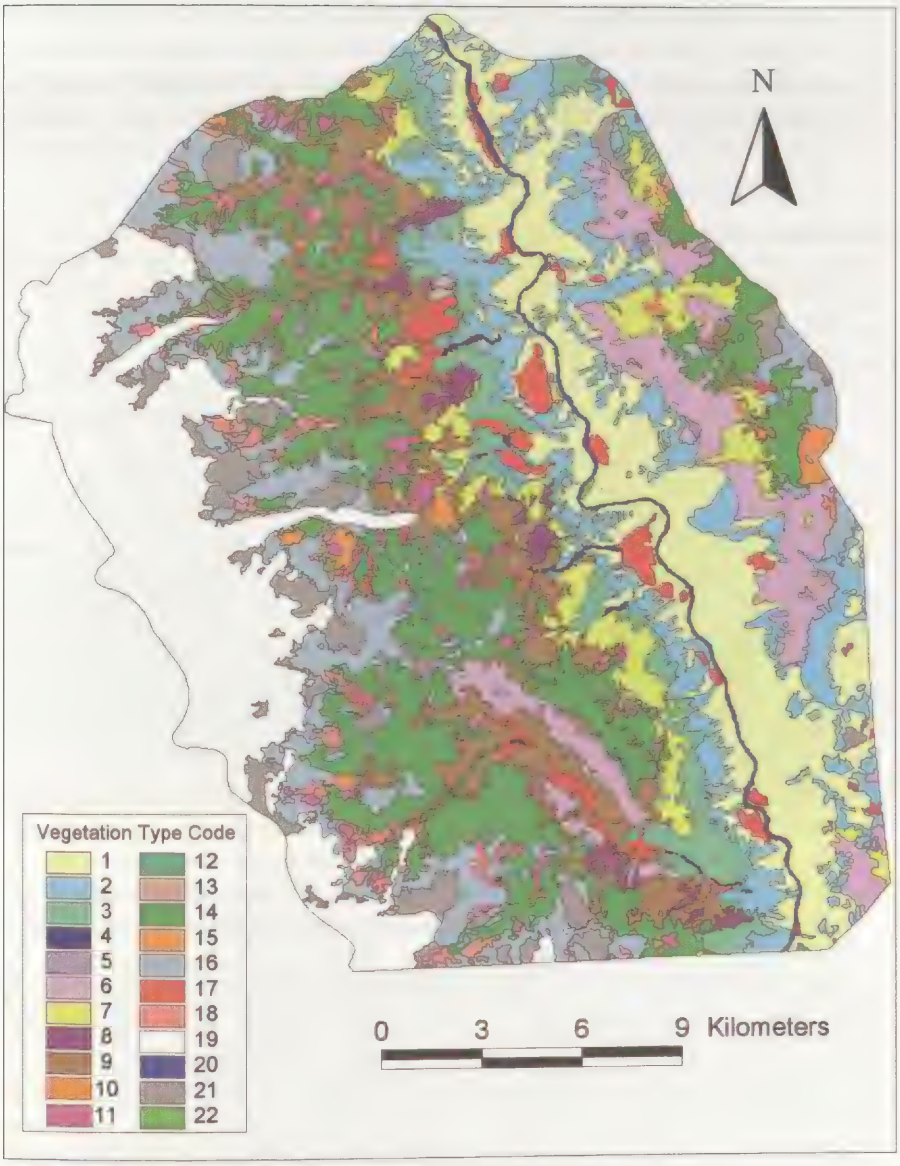
Quercus acrodonta community. This community type is distributed mainly in the valley from Lancang River to Yongzhi village. Wet and warm, these forests occur in elevations ranging from approximately 2200 m to 2500 m. The community is composed of three distinct layers: tree, shrub, and herb. The tree layer is the dominant layer with *Q. acrodonta* being the dominant species. With logging and wood collection, disturbance by the local villagers is evident in these communities.

Sclerophyllous broadleaf forest

The evergreen forests of *Quercus* are common in northwest Yunnan. This vegetation type is important to the local people for firewood, forage, and various species of edible fungi. There are two communities under this formation dominated by *Quercus* spp.: *Q. aquifolioides* and *Q. aquifolioides/Rhododendron decorum*.

Quercus aquifolioides community (MU 6). This community type is distributed at elevations of 2500–3000 m and occurs mostly on sunny slopes of the Khawa Karpo Mountain area. The community is divided into three layers: (1) a tree layer 8–15 m in height with 60–80% cover, (2) a shrub layer 0.4–0.6 m in height with 30–50% cover; and (3) a sparse herb layer 0.1–0.4 m in height with 20–40% cover. *Quercus aquifolioides* and *Q. spinosa* are the dominant species.

Quercus aquifolioides/Rhododendron decorum community (MU 6). This community type is distributed at elevations of 2000–3200 m and commonly occurs on south-facing slopes. With three distinct layers, the tree layer is 10–12 m in height with 85–90% cover. In addition to *Q. aquifolioides*, other common tree species include *Q. spinosa*, *Q. guajavifolia*, *Q. rehderiana*, *Picea brachytyla*, and *Larix potaninii*. The shrub layer is approximately 5 m high with 10–15% cover. Dominant shrub species include *Rhododendron decorum*, *R. yunnanense*, *Lonicera*



Vegetation type mapping units in the study area: (1) short shrubs (hot temperate shrublands differentiated by height); (2) *Platycladus* forest (warm needleleaf forest); (3) tall shrubs (hot temperate shrublands differentiated by height); (4) riparian forest; (5) *Hippophae* forest (deciduous broadleaf forest); (6) sclerophyllous broadleaf forest; (7) *Pinus densata* forest (cold temperate needleleaf forest); (8) *Pinus armandii* forest (warm needleleaf forest); (9) mixed needle and broadleaf forest; (10) *Pseudotsuga forrestii* forest (mixed needle and broadleaf forest); (11) *Betula, Acer,* and *Sorbus* forest (deciduous broadleaf forest); (12) *Larix speciosa* forest (cold temperate needleleaf forest); (13) *Picea* forest (cold temperate needleleaf forest); (14) *Abies* forest (cold temperate needleleaf forest); (15) subalpine meadow and alpine meadow; (16) *Rhododendron beesianum* and *R. phaeochrysum* shrublands (cold temperate shrubs); (17) anthropogenic land; (18) alpine *Salix* shrubs (cold temperate shrubs); (19) snow and glacier; (20) river; (21) rocks and alpine scree; (22) *Cupressus* forest (warm needleleaf forest). From Anderson et al., 2005, *Biodiversity and Conservation* 14(13), figure 4, p. 3071. Reprinted with permission from Springer Science+Business Media.

acuminata, *Dipelta yunnanensis*, *Rosa omeiensis*, *Spiraea schneideriana*, *Clematis montana*, and *Berberis* spp. The herb layer is 0.5–1 m in height with 10–30% cover. There are no dominant species within the herb layer, but species often seen include *Hemiphragma heterophyllum*, *Pimpinella candolleana*, *Primula bracteata*, *Boschniakia himalaica*, *Ophiopogon bodinieri*, *Polygonatum cirrhifolium*, *Epipactis helleborine*, *Habenaria aitchisonii*, *Paragymnopteris delavayi*, *Adiantum fimbriatum*, *Asplenium trichomanes*, *Woodsia andersonii*, and *Polystichum sinense*.

Deciduous broadleaf forest

Hippophae rhamnoides community (MU 5). This community is distributed at elevations of 3000–3200 m and is considered a human artifact as it was believed that the villagers planted the trees of *H. rhamnoides*. However, there is still debate about the status of the community due to the age of trees, which are over several hundred years old. Occurring near the village of Yubeng is a sacred forest in which no trees may be harvested where various annual celebrations are held.

The vertical structure of this community can be divided into three layers: tree, shrub, and herb. The tree layer is approximately 15 m in height with 80% cover. *Hippophae rhamnoides* is the dominant species of the community; other tree species include *Padus obtusata*, *Malus ombrophila*, *Salix cathayana*, *S. radinostachya*, *Populus davidiana*, *Betula utilis*, *Sorbus thibetica*, *S. rufopilosa*, *S. oligodonta*, and *Acer pectinatum*. The shrub layer is approximately 8 m high with 60% cover. Common shrub species include *Caragana bicolor*, *Cotoneaster adpressus*, *C. franchetii*, *Spiraea schneideriana*, *Rubus stimulans*, and *Paeonia delavayi*. The herb layer is approximately 50 cm high with 40% cover. Common species include *Sambucus adnata*, *Potentilla anserina*, *P. microphylla*, *Geum aleppicum*, *Astragalus polycladus*, *Oxytropis melanocalyx*, *Tibetia yunnanensis*, and *Duchesnea indica*.

***Betula* spp., *Acer* spp., and *Sorbus* spp. community** (MU 11). This community is distributed at elevations of 2800–3800 m. This vegetation type has three layers: tree, shrub, and herb. The tree layer is approximately 10–15 m high, 20–30 cm in diameter at breast height (dbh), with 80% cover. Dominant species include *Betula utilis*, *Acer davidii*, *A. pectinatum*, *Sorbus hupehensis*, *S. pteridophylla*, *S. rehderiana*, and *S. rufopilosa*. Moss is very abundant in the forest, which is indicative of the higher moisture content. The shrub layer is approximately 6 m high with 90% coverage. Dominant shrub species include *Zanthoxylum nitidum*, *Enkianthus deflexus*, *Rhododendron anthosphaerum*, *R. oreotrephes*, *R. rubiginosum*, and *Viburnum betulifolium*. The herb layer is approximately 0.3–0.5 m high with 40–50% cover. There is no dominant species in the herb layer, with low species diversity and abundance. Common herb species include *Corydalis yunnanensis*, *Pilea martinii*, *Osmundastrum claytoniana*, *Polystichum nigrum*, and *P. rufopaleaceum*.

Riparian forest

Riparian forest is one of the unique vegetation types occurring in Khawa Karpo.

***Amygdalus mira* community** (MU 4). This community is one of the typical waterside communities. It is distributed mainly along the riverbanks and at elevations of 2200–2800 m. Human disturbance is one of the main influences on the community. The community can also be divided in three layers: tree, shrub, and herb. The tree layer is about 7 m high, with 100% cover. Dominant species of the community include *Amygdalus mira*, *Lonicera ferdinandii*, and *Pteridium aquilinum*.

***Salix luctuosa* and *Zanthoxylum simulans* community** (MU 4). This community is a typical riparian forest distributed along the riverbanks of the Khawa Karpo Mountain area, espe-

cially near villages. The elevation of the community is about 2200–2800 m. The tree layer is approximately 5–6 m in height with 95% cover. The shrub layer is about 1–2 m high and the coverage is only 20–30%. The herb layer is abundant and less than 1 m high with 60–85% cover. Some dominant species of the community are *Salix luctuosa*, *Zanthoxylum simulans*, *Indigofera lenticellata*, *Elsholtzia fruticosa*, and *Paeonia delavayi*.

***Populus haoana* community** (MU 4). This community is also a typical riparian vegetation type occurring at elevations from 2200 to 2600 m and forms long and narrowing distributions along the water courses. This community type can be divided into four layers. The tree layer can be subdivided into two layers, upper and lower. The upper layer is about 25 m high and the lower layer is about 20 m high, with 70% and 50% cover, respectively. The shrub layer is about 1 m high with 80% cover, and the herb layer is 0.2–0.5 m high with 30–50% cover.

Mixed needle and broadleaf forest

***Pseudotsuga forrestii*, *Corylus chinensis*, *Betula* spp. community** (MU 10). This community occurs at elevations of 2600–2900 m in moist areas of Khawa Karpo, especially near Mingyong and Sinong. There are several rare and endangered species distributed throughout this community, such as *Pseudotsuga forrestii*.

The community can be divided into three layers. The tree layer is approximately 25–30 m in height with 75–85% cover. Some common tree species include *Pseudotsuga forrestii*, *Betula* spp., *Corylus chinensis*, *Pinus densata*, *Taxus wallichiana*, *Litsea chunii*, *L. populifolia*, *Tilia paucicostata*, *Cerasus tomentosa*, *Padus obtusata*, *Populus haoana*, *Salix radinostachya*, *Ilex dipyrena*, *Picrasma quassioides*, *Acer cappadocicum*, *A. davidii*, *A. pectinatum*, and *Cornus oblonga*. The shrub layer is 5–6 m high with 40–65% cover. Common shrub species include *Leptopus chinensis*, *Ribes glaciale*, *R. longiracemosum*, *Cotoneaster franchetii*, *C. multiflorus*, *Rosa multibracteata*, *Rubus cockburnianus*, *R. stans*, *Spiraea veitchii*, *Buxus rugulosa*, *Elaeagnus delavayi*, and *Rhododendron* spp. The herb layer is 0.5–1 m high with 30–40% cover. Common herb species include *Aquilegia rockii*, *Agrimonia pilosa*, *Duchesnea indica*, *Fragaria orientalis*, *Geum aleppicum*, *Pternopetalum cardiocarpum*, and *Pyrola atropurpurea*.

***Taxus wallichiana* and *Photinia serratifolia* community** (MU 9). *Taxus wallichiana* is a very important and useful plant with anti-cancer properties. It is listed as a protected plant at the state level. *Taxus wallichiana* forms thick stands distributed in moist and shady habitats in valleys and riverbanks. *Taxus* is commonly found in the Khawa Karpo Mountain area at elevations of 2600–2900 m. The canopy can reach heights up to 15–18 m with 90–100% cover.

The community has three layers: tree, shrub, and herb. The tree layer is 15–20 m high with 70–85% cover. The dominant species are *Taxus wallichiana* and *Photinia serratifolia*. Other tree species include *Picea likiangensis* and *Acer caesium*. The shrub layer is 1–2 m high with 30–40% cover. Some common shrub species include *Rubus stans* and *Sarcococca ruscifolia*. The herb layer is about 0.5–1 m high and very dense with 50–80% cover. *Lepisorus morrisonensis* and *Sambucus adnata* are dominant species in the herb layer, occurring in moist environments. Other common herb species include *Arisaema lobatum* and *Geranium nepalense*.

Warm needleleaf forest

***Pinus armandii* forest** (MU 8). This community is distributed at elevations of 2300–2900 m in Khawa Karpo. They occur near villages in shady slopes. The tree layer is 10–25 m high with 60–75% cover. *Pinus armandii* is the dominant tree species, and other common species in this layer include *Quercus variabilis*, *Q. aliena*, *Q. aquifolioides*, *Cyclobalanopsis oxyodon*, and *Populus davidiana*. The shrub layer is 5–7 m high with 40–50% cover. Common shrub species

include *Rhododendron decorum*, *R. vernicosum*, *Lyonia villosa*, and *Vaccinium fragile*. The herb layer is 0.5–1 m high with 30–45% cover. Common herb species include *Pyrola forrestiana*, *Campanula colorata*, *Anaphalis margaritacea*, *Adiantum davidii*, and *Asplenium trichomanes*.

***Platycladus orientalis* forest** (tall shrubs) (MU 2). This community occurs at elevations of 2000–2600 m and is widely distributed along the western slopes of the Lancang River. *Platycladus orientalis* has a tree habit in most cases, but in areas of human disturbance (local people use the leaves for religious purposes) and in dry and warmer habitats, the habit is shrub. The tree layer of *Platycladus orientalis* community is about 4–5 m high with 60–90% cover. The shrub and herb layers are less diverse and sparse. The shrub layer is less than 1 m high with 30–40% cover. The herb layer is less than 0.4 m high with 30–40% cover.

***Cupressus* forest** (MU 22). *Cupressus duclouxiana* forest community can be seen only in the Lancang River valley. This forest is said to be planted by the local people, but there are large trees more than 2 m dbh and taller than 25 m. This is one of the sacred forests for the local people, as they collect the leaves of this tree for religious ceremonies. Along the Lancang River valley to the south, there are also trees along the banks of the river. *Cupressus duclouxiana* is the only dominant tree species in the community, with shrubs and herbs present.

Cold temperate needleleaf forest

***Pinus densata* forest** (MU 7). *Pinus densata* forest is one of the major vegetation types in the Khawa Karpo Mountain area. This is a geographical substitute species of *P. yunnanensis*. It is believed that the division of these two species is in Hutiaoxia Town [Qiaotou] in Shangri-La County [Zhongdian]. Below 3000 m, *P. yunnanensis* occurs, and above this elevation *P. densata* occurs. As Khawa Karpo Mountain is 200 km away from the site of this division and most of the community of *P. densata* is above 3000 m, it is concluded that the community here is *P. densata* and not *P. yunnanensis*.

The community is distributed at elevations of 2600–3500 m with three distinct layers: tree, shrub, and herb. The tree layer is 12–17 m high with 50–85% cover. Sometimes the tree layer can be subdivided into an upper layer and a lower layer. The shrub layer is 4–5 m high with 30–40% cover. Dominant shrub species include *Rhododendron* spp., *Coriaria nepalensis*, *Rosa* spp., *Indigofera* spp., and *Fargesia* spp. The herb layer is 0.4–0.6 m high with 30–40% cover. The species composition is not very diverse; common herbs include *Potentilla* spp., *Pedicularis* spp., *Anaphalis* spp., *Aster* spp., *Viola* spp., *Pyrola atropurpurea*, *P. forrestiana*, and *Stellaria* spp.

***Picea* spp. forest** (MU 13). The dominant species of this formation are *Picea likiangensis*, *P. brachytyla*, and *Abies georgei*. This community type is commonly found in the Khawa Karpo Mountain area, at elevations of 2600–3800 m and in environments wetter than *Abies* forests. The tallest *Picea* in this area is *P. likiangensis*, which can reach heights greater than 30 m.

The *Picea* forest can be divided into three layers. The tree layer is approximately 30 m high with 80–85% cover and is composed of *Picea* spp., *Betula* spp., or *Acer* spp. The shrub layer height is 5–8 m with 40–50% cover. Dominant shrub species include *Rhododendron* spp., *Sorbus* spp., *Ribes glaciale*, and *R. longiracemosum*. The herb layer is 0.3–0.5 m high with 30–40% cover. Dominant herb species include *Ophiopogon bodinieri*, *Ainsliaea* spp., and *Poa* spp.

***Abies georgei* forest** (MU 14). The community of *Abies georgei* is one of the most abundant community types in the Khawa Karpo Mountain area. They occur at elevations of (3100) 3500–4200 m with 85–90% cover. *Abies georgei* is the dominant species in the tree layer, with *Picea* spp., *Acer* spp., *Sorbus monbeigii*, and other tree species present.

The tree layer is approximately 20–30 m high and sometimes can be subdivided into two layers. The shrub layer is 1–2 m high with 40–60% cover. *Rhododendron* spp. are the dominant shrub species, with *Ribes glaciale, Sorbus poteriifolia, S. rehderiana, Gaultheria praticola, Lonicera* spp., *Fargesia* spp., and *Rosa omeiensis* common within the shrub layer. The herb layer is 0.3–0.6 m high with 20–40% cover. There are few herb species, with common species including *Panax japonicus, Ainsliaea* spp., *Rubus fockeanus, R. fragarioides, Astragalus guanshuanus*, and *Anaphalis nepalensis.*

***Larix speciosa* forest** (MU 12). *Larix speciosa* community is not a common community type in the Khawa Karpo Mountain area; it can be seen only in Shuola and Duotong, at elevations of 3700–3900 m. The dominant species is a deciduous needleleaf tree and the seasonal change is very pronounced. The tree layer is only 12–15 m high with 40–60% cover. The tree layer is also composed of *Picea* spp. and *Abies* spp. The shrub layer is 2 m high with 30–40% cover. *Rhododendron* spp. are the dominant shrub species, with *Cotoneaster* spp. and *Sorbus* spp. also common in the shrub layer. The herb layer is abundant with *Kobresia setschwanensis* being the dominant species. Other common herb species include *Thalictrum* spp., *Rubus fockeanus*, and *Cystopteris moupinensis.*

Shrublands

Cold temperate shrubs

***Rhododendron beesianum* community** (MU 16). This community occurs at elevations of 3400–4200 m. This is one of the most widely distributed *Rhododendron* communities in the Khawa Karpo area.

***Rhododendron phaeochrysum* community** (MU 16). This community is distributed above the timberline at 4000–4500 m.

Alpine *Salix* shrubs community (MU 18). *Salix myrtillacea* community is a high-elevation plant community distributed above the timberline. This community type occurs above 4100 m in the south and above 4500 m in the north. In most cases it is distributed in a U-shape along the glacial valley. *Salix* becomes a very low shrub with a sprawling habit at high elevations. In addition to *Salix*, other common shrub species include *Rhododendron rupicola, R. mekongense*, and *R. campylogynum.*

The community has two layers, shrub and herb. The shrub layer is 1.5–2.5 m high with 80–90% cover. The herb layer is 0.3–0.6 m high with 50–70% cover. Some common herb species include *Kobresia setschwanensis* and *Polygonum viviparum.*

***Juniperus squamata* community**. This is a high-elevation community distributed at elevations of 3900–4300 m and only appears in the northern portion of Khawa Karpo. The vegetation can be divided into two layers, shrub and herb. The shrub layer is 2–4 m high with 50–60% cover. The dominant species is *Juniperus squamata*, and other species such as *Picea* spp., *Abies* spp., *Rhododendron* spp., *Diplarche paucijlora, Diapensia purpurea, Salix paraflabellaris*, and *S. balfouriana* are common in the shrub layer. The herb layer is 0.3–0.5 m high with 30–40% cover. Common herb species include *Primula* spp., *Gentiana* spp., *Ligusticum hispidum*, and *Aconitum tanguticum.*

Hot temperate shrubs (includes both short [MU 1] and tall [MU 3] shrubs).

***Sophora davidii* and *Incarvillea arguta* community**. This community occurs in lower elevations at 2400 m. It is a very typical dry-warm valley vegetation type. The shrub layer is 0.5–1 m high with 40–60% cover and can be divided into two layers, shrub and herb. *Sophora*

davidii, *Artemisia mattfeldii*, and *Osteomeles schwerinae* are dominant species in the shrub layer.

***Elsholtzia capituligera* community**. This community is also a typical dry-warm valley vegetation type, distributed in lower-elevation areas less than 2300 m. Other species in the community include *Salsola collina* and *Bauhinia brachycarpa*.

***Excoecaria acerifolia* and *Ligustrum lucidum* community**. This community is also a dry-warm valley vegetation type that is distributed at elevations less than 2600 m. The shrub layer is 0.5–1.5 m high with 40–80% cover. The herb layer is sparse, 0.2–0.6 m high, with 30–40% cover. Common species include *Excoecaria acerifolia*, *Ligustrum lucidum*, *Artemisia mattfeldii*, *Bauhinia brachycarpa*, and *Daphne longilobata*.

Meadows

Subalpine meadows (MU 15). This community is distributed at elevations below 4000 m. Meadows occur in these areas because of human disturbance. Most of the meadows were formed as a result of logging or forest fires. These subalpine meadows are considered secondary vegetation types. There are several different communities depending on the dominant species, which are *Rumex nepalensis*, *Taraxacum eriopodum*, *Sambucus adnata*, *Ligularia* spp., *Anemone* spp., and *Osmunda claytoniana* communities.

Alpine meadows (MU 15). Alpine meadows are distributed at high elevations of 4000–4500 m above timberline. There are several different communities depending on the dominant species in the meadow. These are *Pedicularis* spp., *Primula* spp., *Gentiana* spp., *Chionocharis hookeri*, *Arenaria lancangensis*, *Anemone demissa*, and *Potentilla cuneata*. The community is composed of herbs 0.05–0.2 m high with 40–50% cover.

Alpine scree (MU 21). Alpine screes are distributed at higher elevations, approximately 4300–5300 m. Alpine screes in the Khawa Karpo Mountain area are primarily distributed in the northern part of Khawa Karpo peak and mostly occur at elevations above 5000 m. The rocks forming the scree are mainly composed of schist, purple sandstone, and granite. Different screes formed by different rocks have their own unique flora and form different communities. The flora in granite rocks includes *Saussurea obvallata*, *Rhodiola crenulata*, and *Corydalis hemidicentra*. The flora in schist and purple sandstone include *Marmoritis complanatum*, *Fritillaria delavayi*, *Saussurea tridactyla*, *S. gossipiphora*, and *Corydalis* spp. There are several communities within the alpine scree vegetation type, such as *Saussurea* spp., *M. complanata*, *Corydalis* spp., *Draba* spp., *Aconitum ouvrardianum*, *Rhodiola* spp., *Bergenia purpurascens*, *Saxifraga* spp., and *Gentiana* spp.

Anthropogenic

Anthropogenic community (including crop land and fruit gardens) (MU 17). There are several types of crop plantation in the Khawa Karpo Mountain area. Most of the croplands are located near villages at elevations less than 3000 m. Highland barley, potato, and wheat (lower elevations) are major crops planted.

APPENDIX 2

CHECKLIST OF VASCULAR PLANTS

Fang Zhendong

Contributing authors: Danica Anderson, Nanci J. Ross, George Yatskievych, Zhu Weiming, He Zhaorong, Lu Shugang, Zhang Guangfei, Yan Haizhong, He Jijian, Zhang Canming, Pan Fasheng, Shu Yongchun, Hai Xian, and Liulin

THE FOLLOWING IS A LIST of the vascular plants known from the Khawa Karpo area of northwestern Yunnan Province, China (see flyleaf maps). It is arranged in four sections: Lycophytes, Pteridophytes, Gymnosperms (conifers), and Angiosperms. Within each of these sections, the families, their genera, and the species are arranged alphabetically except for the Pteridophytes. For the Pteridophytes, no family classifications are presented, and the genera are arranged in alphabetical order; accepted genera follow Christenhusz et al. (2011). This checklist does not include infraspecific taxa. Angiosperm family circumscriptions here follow APG III (Angiosperm Phylogeny Group, 2009).

Accepted names for genera and species follow the *Flora of China* (Wu & Raven, 1994–2001; Wu et al., 2001–2011, <http://flora.huh.harvard.edu/china/>), except where an updated taxonomy is available for an entire angiosperm family (Warwick et al., 2006), or when the *Flora of China* treatment has not been published. In general only the accepted name is given here, but a few synonyms are provided as cross-references to recent taxonomic changes. For groups that do not yet have published treatments available in the *Flora of China*, the accepted names here follow the electronic Flora of China Checklist (Flora of China Editorial Committee, 1988–2013, <http://www.tropicos.org/Reference/42480>, accessed: Oct.–Dec. 2011) or the unpublished draft treatments available for Pteridophytes. Additional name information, including type specimen data and nomenclatural synonyms, can be found at <http://www.tropicos.org>. The checklist below is focused mainly on native and naturalized plants, but some cultivated species are also listed here and designated as such.

The majority of the species reports here are documented by specimens, with the others based on observation by Fang Zhendong. One voucher specimen is cited here for each species report, with its herbarium of deposit indicated. Herbarium acronyms follow the Index Herbariorum <http://www.sweetgum.nybg.org/ih>, with one addition: the Shangri-La Alpine Botanical Garden, Yunnan, China, is cited as SABG. The other principal herbaria of deposit for specimens cited are Royal Botanic Garden Edinburgh (E); Royal Botanic Gardens (K); Kunming Institute of Botany, Chinese Academy of Sciences (KUN); Missouri Botanical Garden (MO); Institute of Botany, Chinese Academy of Sciences (PE); Yunnan University (PYU); Uppsala University (UPS); and Yunnan Institute of Pharmacology (YIM). Specimens from several collecting teams are cited. The Meili Team included Zhu Weiming, Fang Zhendong, Lu Shugang, He Zhaorong, Zhang Guangfei, Yan Haizhong, Pan Fasheng, Zhang Canming, and He Jijian. The Meilishi Team included Fang Zhendong, Jan Salick, Nanci Ross, Suresh Ghimire, Abe Lloyd, Hai Xian, Xie Aifang, Xiao Maorong, Shi Xiaowu, Li Lei, and Yangzong. The Ruizi La Team included Fang Zhendong, Jan Salick, Hu Huabin,

Hai Xian, Xie Hongyan, Li Deyou, Shi Xiaowu, He Guang, Li Hong, and Qizhu. The specimens of the Qinghai-Xizang Team were collected by Que Binyun.

Overall distribution data for these species are taken from the Flora of China project when available. Within China, the distribution of native species is given by province, with a list of the provinces in which the species occurs following the Flora of China format. The distributions are sometimes modified by using the directions C(entral), E(ast), N(orth), S(outh), W(est), or intermediate directions. The Chinese region adjacent to Yunnan has been called both Xizang and, in older works, Tibet; this region is herein listed as "Xizang (Tibet)." When a species also occurs outside China, the additional distribution is presented in brackets. Only individual countries and disputed political entities of tropical Asia plus the temperate countries adjacent to China are listed. Both Kashmir and Sikkim are treated as countries and included. Outside this region, only generalized additional ranges are noted and separated by a semicolon. For species that do not yet have a treatment available in the *Flora of China*, the distribution information is taken from other sources including the *Flora Reipublicae Popularis Sinicae* (Flora Reipublicae Popularis Sinicae Agendae Academiae Sinicae Edita, 1959–2006), *Vascular Plants of the Hengduan Mountains* (Wang & Wu, 1993–1994), and *Flora Yunnanica* (Wu, 1977–2006). Detailed distribution information is given for plants that are cultivated in the study region but not also found in the wild here.

Information on plant uses was complied from published sources (*Index Florae Yunnanensis, Vols. 1–2* [Wu, 1984], *Illustrated Handbook for Medicinal Materials from Nature in Yunnan, Vols. 1–6* [Yunnan Institute of Materia Medica, 2003–2010], *A Checklist of Chinese Medicinal Resources of Yunnan* [Yunnan Provincial Medicinal Company, 1993], *Diqing Tibetan Medicine, Vols. 1–2* [Yang & Chuchengjiangcuo, 1987]), and personal interviews with local Tibetan villagers. Interviews were conducted by the Missouri Botanical Garden team from 2001 to 2006 (Law & Salick, 2006).

Acknowledgments

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LYCOPHYTES

Lycopodiaceae

Lycopodium L.

Lycopodium pseudoclavatum Ching
Distribution: China. Xizang (Tibet), Yunnan [Bhutan, India, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Fang Zhendong 1784* (SABG). *Use(s):* none documented.

Lycopodium veitchii H. Christ
Distribution: Yunnan [Nepal]. *Specimen: Meili Team 25559* (PYU, SABG). *Use(s):* none documented.

Lycopodium zonatum Ching
Distribution: China. Xizang (Tibet), Yunnan. *Specimen: Fang Zhendong 1599* (SABG). *Use(s):* medicinal.

Selaginellaceae

Selaginella P. Beauv.

Selaginella albocincta Ching
Distribution: China. Sichuan, Yunnan, Xizang (Tibet). *Specimen: Zhu Weiming 17273* (PYU). *Use(s):* none documented.

Selaginella compta Hand.-Mazz.
Distribution: China. Guangxi, Shaanxi, Sichuan, Yunnan. *Specimen: Meili Team 25762* (PYU, SABG). *Use(s):* none documented.

Selaginella nipponica Franch. & Sav.
Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Henan, Hong Kong, Hubei, Hunan, Jiangsu, Jiangxi, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Japan]. *Specimen: Meili Team 25060* (PYU, SABG). *Use(s):* none documented.

Selaginella pulvinata (Hook. & Grev.) Maxim.
Distribution: China. Beijing, Fujian, Gansu, Guizhou, Hubei, Jiangxi, Liaoning, Shaanxi, Shanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan [India, Japan, Korea, Mongolia, Russia, Thailand, Vietnam]. *Specimen: Fang Zhendong & Zhu Weiming 2097* (PYU, SABG). *Use(s):* medicinal, veterinary, fertilizer, firewood.

Selaginella sanguinolenta (L.) Spring
Distribution: Gansu, Guizhou, Heilongjiang, Henan, Jilin, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Mongolia, Russia]. *Specimen: Fang Zhendong 1764* (SABG). *Use(s):* medicinal.

Selaginella vardei H. Lév.
Distribution: China. Gansu, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Zhu Weiming 17272* (PYU). *Use(s):* none documented.

PTERIDOPHYTES

Adiantum L.

Adiantum capillus-veneris L.
Distribution: China. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Japan, Vietnam; widely distributed in temperate and tropical regions in Africa, America, Asia, Europe, Oceania]. *Specimen: Meili Team 28243* (PYU, SABG). *Use(s):* medicinal, ornamental.

Adiantum davidii Franch.
Distribution: China. Gansu, Guizhou, Hebei, Henan, Shaanxi, Shanxi, Sichuan, Yunnan. *Specimen: Fang Zhendong 1551* (SABG). *Use(s):* medicinal.

Adiantum fimbriatum H. Christ
Distribution: China. Gansu, Hebei, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Fang Zhendong 1623* (SABG). *Use(s):* medicinal.

Adiantum pedatum L.
Distribution: China. Anhui, Gansu, Guizhou, Henan, Hubei, Hunan, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Myanmar (Burma)]. *Specimen: Meili Team 28115* (PYU, SABG). *Use(s):* medicinal, ornamental.

Aleuritopteris Fée

Aleuritopteris albofusca (Baker) Pichi-Sermolli
Distribution: China. Gansu, Guizhou, Hebei, Hunan, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Fang Zhendong & Zhang Canming 2383* (SABG). *Use(s):* none documented.

Aleuritopteris argentea (S. G. Gmél.) Fée
Distribution: China widely distributed [Japan,

Korea, Mongolia, Russia]. *Specimen: Meili Team 25821* (PYU, SABG). *Use(s):* medicinal.

Aleuritopteris grisea (Blanf.) Panigrahi
Distribution: China. Guangxi, Guizhou, Hebei, Sichuan, Xizang (Tibet), Yunnan [India, Nepal, Thailand]. *Specimen: George Yatskievych 04-077* (KUN, MO). *Use(s):* medicinal.

Aleuritopteris kuhnii (Milde) Ching
Distribution: China. Gansu, Hebei, Henan, Jilin, Liaoning, Nei Mongol, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan [Japan, Korea, Russia]. *Specimen: Meili Team 26500* (PYU, SABG). *Use(s):* medicinal.

Aleuritopteris leptolepis (Fraser-Jenk.) Fraser-Jenk.
(*Aleuritopteris dalhousiae* (Hook.) Ching, nom. rej.)
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [India, Myanmar (Burma), Nepal, Pakistan, the Philippines, Sikkim]. *Specimen: Meili Team 27888* (PYU, SABG).

Aleuritopteris likiangensis Ching
Distribution: China. Sichuan, Yunnan. *Specimen: Fang Zhendong & Zhang Canming 2374* (SABG). *Use(s):* none documented.

Aleuritopteris niphobola (C. Chr.) Ching
Distribution: China. Gansu, Hebei, Nei Mongol, Ningxia, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Zhu Weiming 17245* (PYU). *Use(s):* none documented.

Aleuritopteris subvillosa (Hook.) Ching
Distribution: China. Yunnan [Bhutan, India, Myanmar (Burma), Nepal, Sikkim]. *Specimen: George Yatskievych 04-078* (KUN, MO). *Use(s):* none documented.

Allantodia R. Br.

Allantodia crenata (Sommerf.) Ching
Distribution: China. Beijing, Gansu, Heilongjiang, Henan, Jilin, Liaoning, Nei Mongol, Shanxi, Shaanxi, Sichuan [Japan, Korea, Russia, Europe]. *Specimen: Meili Team 25501* (SABG). *Use(s):* none documented.

Arthromeris (T. Moore) J. Sm.

Arthromeris mairei (Brause) Ching
Distribution: China. Guangxi, Guizhou, Hubei, Jiangxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan [India, Myanmar (Burma)]. *Specimen: Fang Zhendong & Zhang Canming 2516* (SABG). *Use(s):* medicinal.

Asplenium L.

Asplenium adiantum-nigrum L.
Distribution: China. Shaanxi, Taiwan, Xizang (Tibet), Yunnan [India, Pakistan, Sikkim]. *Specimen: Fang Zhendong 1756* (SABG). *Use(s):* none documented.

Asplenium ensiforme Wall. ex Hook. & Grev.
Distribution: China. Guangdong, Guangxi, Guizhou, S. Hunan, Jiangxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Bhutan, India, Japan, Myanmar (Burma), Sri Lanka, Nepal, Sikkim, Thailand, Vietnan]. *Specimen: Feng Guomei 5597* (KUN). *Use(s):* none documented.

Asplenium nesii H. Christ
Distribution: China. Gansu, Nei Mongol, Qinghai, Shaanxi, Sichuan, Xijiang, Xizang (Tibet), Yunnan [Afghanistan, India, Pakistan]. *Specimen: Zhu Weiming 17186* (PYU). *Use(s):* none documented.

Asplenium pekinense Hance
Distribution: China. Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Nei Mongol, Ningxia, Shaanxi, Shandong, Shanxi, Taiwan, Yunnan, Zhejiang [Japan, Korea]. *Specimen: Fang Zhendong 1754* (SABG). *Use(s):* medicinal.

Asplenium ruta-muraria L.
Distribution: China. Sichuan, Yunnan [Europe, naturalized worldwide]. *Specimen: Meili Team 28150* (PYU, SABG). *Use(s):* none documented.

Asplenium tenuicaule Hayata
Distribution: China. Hainan, Taiwan, Yunnan. *Specimen: Meili Team 26456* (SABG). *Use(s):* none documented.

Asplenium trichomanes L.
Distribution: China. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang. *Specimen: Fang Zhendong 1702* (SABG). *Use(s):* medicinal.

Asplenium varians Wall. ex Hook. & Grev.
Distribution: China. Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Indonesia, Nepal, Sikkim, Sri Lanka, South Africa, Hawaiian Islands]. *Specimen: Fang Zhendong 1547* (SABG). *Use(s):* none documented.

Asplenium yunnanense Franch.
Distribution: China. Guangxi, Guizhou, Hebei, Sichuan, Xizang (Tibet), Yunnan [India, Myanmar (Burma), Vietnam]. *Specimen: Meili Team 25828* (PYU, SABG). *Use(s):* medicinal.

Athyrium Roth

Athyrium atkinsonii Bedd.
Distribution: China. Shanxi, Shaanxi, Gansu, Jiangxi, Fujian, Taiwan, Henan, Hubei, Hunan, Chongqing, Sichuan, Guizhou, Yunnan, Xizang (Tibet) [Japan, S Korea, Myanmar (Burma), Sikkim, Bhutan, Nepal, India, Pakistan, Kashmir]. *Specimen: Danica Anderson 213* (MO, SABG). *Use(s):* food.

Athyrium austro-orientale Ching
Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 27977* (PYU, SABG). *Use(s):* none documented.

Athyrium chungtienense Ching
Distribution: China. Yunnan. *Specimen: Fang Zhendong 1791* (SABG). *Use(s):* none documented.

Athyrium davidii (Franch.) H. Christ
Distribution: China. Sichuan, Yunnan, Xizang (Tibet) [Myanmar (Burma), Nepal, Sikkim, India]. *Specimen: Zhu Weiming 20730* (PYU). *Use(s):* none documented.

Athyrium delicatulum Ching & S. K. Wu
Distribution: China. Chongqing, Guangxi, Guizhou, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team s.n.* (SABG). *Use(s):* none documented.

Athyrium dentigerum (Wall. ex C. B. Clarke) Mehra & Bir
Distribution: China. Gansu, Sichuan, Guizhou, Yunnan, Xizang (Tibet) [Sikkim, India, Myanmar (Burma)]. *Specimen: Wu Sugong et al. 210* (KUN). *Use(s):* none documented.

Athyrium dubium Ching
Distribution: China. Sichuan, Guizhou, Yunnan, Xizang (Tibet) [Sikkim]. *Specimen: Fang Zhendong 1698* (SABG). *Use(s):* none documented.

Athyrium foliolosum T. Moore ex R. Sim
Distribution: China. Taiwan, Yunnan, Xizang (Tibet) [Nepal, Sikkim, Bhutan, India, Myanmar (Burma)]. *Specimen: Feng Guomei 5582* (KUN). *Use(s):* none documented.

Athyrium lineare Ching
Distribution: China. Yunnan. *Specimen: Fang Zhendong 1770* (SABG). *Use(s):* none documented.

Athyrium mackinnoni (C. Hope) C. Chr.
Distribution: China. Shaanxi, Gansu, Hubei, Hunan, Guangxi, Sichuan, Chongqing, Guizhou, Yunnan, Xizang (Tibet) [Nepal, Sikkim, Vietnam, Myanmar (Burma), Thailand, India, Pakistan, Afghanistan]. *Specimen: Fang Zhendong 1792* (SABG). *Use(s):* none documented.

Athyrium mehrae Bir
Distribution: China. Yunnan, Xizang (Tibet) [Sikkim]. *Specimen: Fang Zhendong 1793* (SABG). *Use(s):* none documented.

Athyrium obtusilimbum Ching
Distribution: China. Yunnan. *Specimen: Meili Team 27228* (PYU, SABG). *Use(s):* none documented.

Athyrium repens (Ching) Fraser-Jenk.
Distribution: China. Sichuan, Yunnan [Nepal, Sikkim]. *Specimen: Meili Team 26840* (PYU, SABG). *Use(s):* none documented.

Athyrium rhachidosorum (Hand.-Mazz.) Ching
Distribution: China. Sichuan, Yunnan, Xizang (Tibet) [Myanmar (Burma)]. *Specimen: Feng Guomei 5509* (KUN). *Use(s):* none documented.

Athyrium rupicola (Edgew. ex C. Hope) C. Chr.
Distribution: China. Sichuan, Yunnan, Xizang (Tibet) [Nepal, Sikkim, Bhutan, Kashmir, India, Pakistan]. *Specimen: Meili Team 26515* (PYU, SABG). *Use(s):* none documented.

Athyrium schizochlamys (Ching) K. Iwats.
Distribution: China. Sichuan, Yunnan, Xizang (Tibet) [Nepal]. *Specimen: Fang Zhendong 1834* (SABG). *Use(s):* none documented.

Athyrium subtriangulare (Hook.) Bedd.
Distribution: China. Shaanxi, Gansu, Qinghai, Hubei, Chongqing, Sichuan, Yunnan, Xizang (Tibet) [Nepal, Bhutan, Sikkim, India]. *Specimen: Danica Anderson 202* (MO, SABG). *Use(s):* food.

Athyrium wallichianum Ching
Distribution: China. Sichuan, Yunnan, Xizang (Tibet) [Nepal, Sikkim, Bhutan, India, Myanmar (Burma), Pakistan, Kashmir]. *Specimen: Fang Zhendong 1608* (SABG). *Use(s):* none documented.

Botrychium Sw.

Botrychium lunaria (L.) Sw.
Distribution: China. Gansu, Hebei, Jilin, Shaanxi, Shanxi, Sichuan, Yunnan [Europe, North America]. *Specimen: George Yatskievych 04-053* (KUN, MO). *Use(s):* none documented.

Botrychium modestum Ching
Distribution: China. Yunnan. *Specimen: Feng Guomei 5668* (KUN). *Use(s):* medicinal.

Botrychium robustum (Rupr.) Underw.
Distribution: China. Yunnan [Mongolia, Russia]. *Specimen: Zhu Weiming 23734* (PYU). *Use(s):* none documented.

Botrychium virginianum (L.) Sw.
Distribution: China. Gansu, Henan, Hubei, Shanxi, Yunnan, Zhejiang. *Specimen: Meili Team 25253* (PYU, SABG). *Use(s):* medicinal.

Coniogramme Fée

Coniogramme affinis (C. Presl) Hieron.
Distribution: China. Chongqing, Gansu, Heilongjiang, Henan, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [India, Myanmar (Burma), Nepal]. *Specimen: Meili Team 28117* (PYU, SABG). *Use(s):* none documented.

Coniogramme intermedia Hieron.
Distribution: China. Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hunan, Jiangxi, Jilin, Ningxia, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Japan, Korea, Nepal, Pakistan, Russia, Vietnam]. *Specimen: Danica Anderson 378* (MO, SABG). *Use(s):* none documented.

Coniogramme rosthornii Hieron.
Distribution: China. Gansu, Guizhou, Hubei, Shaanxi, Sichuan, Yunnan [Vietnam]. *Specimen: Wang Qiwu 65142* (KUN). *Use(s):* none documented.

Crepidomanes C. Presl

Crepidomanes latealatum (Bosch) Copel.
Distribution: China. Guangdong, Guangxi, Guizhou, Hainan, Sichuan, Taiwan, Yunnan [India, Japan, Malaysia, Sri Lanka, Thailand, Vietnam, Pacific Islands]. *Specimen: Feng Guomei 5579* (KUN). *Use(s):* none documented.

Cryptogramma R. Br.

Cryptogramma brunoniana Wall. ex Hook. & Grev.
Distribution: China. Hubei, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Russia]. *Specimen: Meili Team 25131* (PYU, SABG). *Use(s):* none documented.

Cryptogramma stelleri (S. G. Gmel.) Prantl
Distribution: China. Gansu, Hebei, Qinghai, Shaanxi, Shanxi, Taiwan, Xinjiang, Xizang (Tibet), Yunnan [Bhutan, India, Japan, Nepal, Russia; North America]. *Specimen: Fang Zhendong 1610* (SABG). *Use(s):* none documented.

Cyclosorus Link

Cyclosorus penangianus (Hook.) Copel.
Distribution: China. Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangxi, Sichuan, Yunnan, Zhejiang [India, Nepal, Sikkim]. *Specimen: Zhu Weiming 21067* (PYU, SABG). *Use(s):* none documented.

Cyrtomium C. Presl

Cyrtomium caryotideum (Wall. ex Hook. & Grev.) C. Presl
Distribution: China. Chongqing, Gansu, Guangdong, Guizhou, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Bhutan, India, Japan, Nepal, Pakistan, the Philippines, Vietnam]. *Specimen: Zhu Weiming 21078* (PYU). *Use(s):* medicinal.

Cyrtomium fortunei J. Sm.
Distribution: China. Anhui, Chongqing, Fujian, S Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shanxi, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang [Korea, Japan, Nepal, Thailand, Vietnam]. *Specimen: Meili Team 27255* (PYU, SABG). *Use(s):* medicinal.

Cystopteris Bernh.

Cystopteris dickieana R. Sim
Distribution: China. Hebei, Shaanxi, Gansu, Qinghai, Xinjiang, Taiwan, Sichuan, Yunnan, Xizang (Tibet) [India, Nepal, Pakistan, Afghanistan; Europe, North America, Africa]. *Specimen: Fang Zhendong 1548* (SABG). *Use(s):* none documented.

Cystopteris fragilis (L.) Bernh.
Distribution: China. Heilongjiang, Jilin, Liaoning, Nei Mongol, Hebei, Shanxi, Shaanxi, Ningxia, Gansu, Qinghai, Xinjiang, Shandong, Anhui, Taiwan, Henan, W Sichuan, Yunnan, Xizang (Tibet) [Japan, Korea, Mongolia, Russia, India, Nepal, Pakistan, Afghanistan, Iran, Turkey; Europe, North America, South America, Africa]. *Specimen: Fang Zhendong 1649* (SABG). *Use(s):* none documented.

Cystopteris montana (Lam.) Bernh. ex Desv.
Distribution: China. Nei Mongol, Hebei, Shanxi, Shaanxi, Ningxia, Gansu, Qinghai, Xinjiang, Taiwan, Henan, Sichuan, Yunnan, Xizang (Tibet) [Europe, Korea, Japan, Russia, India, Pakistan; North America]. *Specimen: Meili Team 26706* (PYU, SABG). *Use(s):* none documented.

Cystopteris moupinensis Franch.
Distribution: China. Hebei, Shaanxi, Gansu, Henan, Nuizhou, Qinghai, Sichuan, Taiwan, Yunnan, Xizang (Tibet) [India, Japan, Sikkim]. *Specimen: Fang Zhendong 1594* (SABG). *Use(s):* medicinal.

Cystopteris pellucida (Franch.) Ching
Distribution: China. Shaanxi, Gansu, Henan, Sichuan, Yunnan, Xizang (Tibet). *Specimen: Meili Team 26508* (SABG). *Use(s):* none documented.

Davallia Sm.

Davallia clarkei Baker
Distribution: China. Fujian, Guangxi, Guizhou, Jiangxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Myanmar (Burma), Nepal, Thailand]. *Specimen: Fang Zhendong 1558* (SABG). *Use(s):* none documented.

Davallia pulchra D. Don
Distribution: China. Guangxi, Guizhou, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Laos, Myanmar (Burma), Nepal, Sri Lanka, Thailand, Vietnam]. *Specimen: Meili Team 28112* (PYU, SABG). *Use(s):* none documented.

Deparia Hook. & Grev.

Deparia acuta (Ching) Fraser-Jenk.
Distribution: China. Xizang (Tibet), Yunnan [India, Pakistan]. *Specimen: Meili Team 26459* (PYU, SABG). *Use(s):* none documented.

Deparia japonica (Thunb.) M. Kato
Distribution: China. Fujian, Gansu, Guangxi, Henan, Hubei, Shandong, Sichuan, Yunnan, Zhejiang [India, Indonesia, Japan, Korea, Pacific Islands, Vietnam]. *Specimen: Zhu Weiming 21035* (PYU). *Use(s):* none documented.

Deparia unifurcata (Baker) M. Kato
Distribution: China. Guizhou, Hunan, Sichuan, Taiwan, Yunnan, Zhejiang [Japan, Vietnam]. *Specimen: Zhu Weiming 21070* (PYU). *Use(s):* none documented.

Drymotaenium Makino—see *Lepisorus*

Drynaria (Bory) J. Sm.

Drynaria delavayi H. Christ
Distribution: China. Gansu, Qinghai, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, Myanmar (Burma)]. *Specimen: Fang Zhendong 2003-49* (SABG). *Use(s):* medicinal.

Drynaria mollis Bedd.
Distribution: China. Xizang (Tibet), Yunnan [India, Sikkim, Nepal, and Bhutan]. *Specimen: Qinghai-Xizang (Tibet) Team 81-3580* (KUN). *Use(s):* none documented.

Drynaria sinica Diels
Distribution: China. Gansu, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: George Yatskievych 04-047* (MO, KUN). *Use(s):* medicinal.

Dryoathyrium Ching—see *Deparia*

Dryopsis Holttum & P. J. Edwards

Dryopsis clarkei (Baker) Holttum & P. J. Edwards
Distribution: China. Guangxi, Guizhou, Sichuan, Xizang (Tibet), Yunnan [Myanmar (Burma), Nepal, Sikkim]. *Specimen: Feng Guomei 6765* (KUN). *Use(s):* none documented.

Dryopsis nidus (Baker) Holttum & P. J. Edwards
Distribution: China. Guizhou, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Nepal, Sikkim]. *Specimen: Meili Team 27984* (PYU, SABG). *Use(s):* none documented.

Dryopteris Adans.

Dryopteris acutodentata Ching
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [India, Kashmir, Nepal]. *Specimen: Fang Zhendong 1835* (SABG). *Use(s):* none documented.

Dryopteris alpestris Tagawa
Distribution: China. Taiwan, Xizang (Tibet), Yunnan [Nepal]. *Specimen: Fang Zhendong 1613* (SABG). *Use(s):* none documented.

Dryopteris barbigera (T. Moore ex Hook.) Kuntze
Distribution: China. Qinghai, Sichuan, Yunnan [India, Kashmir, Nepal]. *Specimen: Fang Zhendong 1703* (SABG). *Use(s):* none documented.

Dryopteris chrysocoma (H. Christ) C. Chr.
Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Myanmar (Burma), Nepal]. *Specimen: Zhu Weiming 23666* (PYU). *Use(s):* none documented.

Dryopteris dickinsii (Franch. & Sav.) C. Chr.
Distribution: China. Anhui, Fujian, Guangxi, Guizhou, Hubei, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [India, Japan]. *Specimen: Zhu Weiming 21032* (PYU). *Use(s):* none documented.

Dryopteris fibrillosissima Ching
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. Specimen: *Meili Team 25769* (PYU, SABG). *Use(s):* medicinal.

Dryopteris fructuosa (H. Christ) C. Chr.
Distribution: China. Hubei, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Bhutan, India, Myanmar (Burma), Nepal]. *Specimen: Fang Zhendong & Zhang Canming 2493* (SABG). *Use(s):* none documented.

Dryopteris goeringiana (Kunze) Koidz.
Distribution: China. Sichuan, Yunnan [Japan, Korea, Russia]. *Specimen: Fang Zhendong & Zhang Canming 2416* (SABG). *Use(s):* medicinal.

Dryopteris habaensis Ching
Distribution: China. Yunnan. *Specimen: Fang Zhendong & Zhang Canming 2610* (SABG). *Use(s):* none documented.

Dryopteris juxtaposita H. Christ
Distribution: China. Gansu, Guizhou, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India]. *Specimen: Meili Team 25171* (PYU, SABG). *Use(s):* none documented.

Dryopteris komarovii Kossinsky
Distribution: China. Gansu, Qinghai, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Bhutan, India, Myanmar (Burma), Nepal, Russia]. *Specimen: Fang Zhendong 1618* (SABG). *Use(s):* none documented.

Dryopteris lachoongensis (Bedd.) B. K. Nayar & S. Kaur
Distribution: China. Xizang (Tibet), Yunnan [Bhutan, India, Nepal]. *Specimen: Fang Zhendong 1559* (SABG). *Use(s):* none documented.

Dryopteris lepidopoda Hayata
Distribution: China. Sichuan, Taiwan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal]. *Specimen: Fang Zhendong 1794* (SABG). *Use(s):* none documented.

Dryopteris montigena Ching
Distribution: China. Yunnan. *Specimen: Meili Team 28220* (PYU, SABG). *Use(s):* none documented.

Dryopteris neorosthorni Ching
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal]. *Specimen: Fang Zhendong 1769* (SABG). *Use(s):* none documented.

Dryopteris nyingchiensis Ching
Distribution: China. Xizang (Tibet), Yunnan. *Specimen: Meili Team 24703* (PYU, SABG). *Use(s):* none documented.

Dryopteris pseudoraria H. Christ
Distribution: China. Sichuan, Yunnan. *Specimen: George Yatskievych 04-019* (KUN, MO). *Use(s):* none documented.

Dryopteris redactopinnata S. K. Basu & Panigrahi
Distribution: China. Sichuan, Xizang, Yunnan [India, Kashmir, Pakistan]. *Specimen: Wu et al. WB-196* (KUN). *Use(s):* none documented.

Dryopteris serratodentata (Bedd.) Hayata
Distribution: China. Sichuan, Taiwan, Xizang (Tibet), Yunnan [Bhutan, India, Myanmar (Burma), Nepal]. *Specimen: George Yatskievych 04-051* (KUN, MO). *Use(s):* medicinal.

Dryopteris sinofibrillosa Ching

Distribution: China. Sichuan, Xizang (Tibet), Yunnan [India, Kashmir, Nepal, Pakistan]. *Specimen: Fang Zhendong 1795* (SABG). *Use(s):* none documented.

Dryopteris squamifera Ching & S. K. Wu

Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Fang Zhendong 1587* (SABG). *Use(s):* none documented.

Dryopteris sublacera H. Christ

Distribution: China. Hubei, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal]. *Specimen: Meili Team 26757* (PYU, SABG). *Use(s):* none documented.

Dryopteris wallichiana (Spreng.) Hyl.

Distribution: China. Fujian, Guizhou, Jiangxi, Shanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan [India, Japan, Malaysia, Myanmar (Burma), Nepal]. *Specimen: Meili Team 28190* (PYU, SABG). *Use(s):* none documented.

Dryopteris yigongensis Ching

Distribution: China. Xizang (Tibet), Yunnan [India]. *Specimen: Meili Team 24910* (PYU, SABG). *Use(s):* medicinal.

Dryopteris yungtzeensis Ching

Distribution: China. Yunnan. *Specimen: Meili Team 28217* (PYU, SABG). *Use(s):* medicinal.

Dryopteris sp.

Distribution: China. Yunnan. *Specimen: Zhu Weiming 20725* (PYU). *Use(s):* none documented.

Equisetum L.

Equisetum debile Roxb. ex Vaucher

Distribution: China. Yunnan [Myanmar (Burma), Thailand, Malaysia]. *Specimen: Zhu Weiming 17224* (PYU). *Use(s):* medicinal.

Equisetum diffusum D. Don

Distribution: China. Gansu, Guangxi, Hunan, Jiangsu, Qinghai, Shanghai, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Japan, Myanmar (Burma), Nepal, Vietnam]. *Specimen: Wu Sugong et al. WB-221* (KUN) *Use(s):* medicinal.

Equisetum ramosissimum Desf.

Distribution: China. Anhui, Beijing, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hong Kong, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Macao, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanghai, Shanxi, Sichuan, South China Sea Islands, Taiwan, Tianjin, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang [India, Japan, the Philippines, Sri Lanka]. *Specimen: George Yatskievych, Deng Zhiwei, Ana & Naji 04-157* (KUN, MO). *Use(s):* medicinal, forage and/or fodder.

Goniophlebium C. Presl

Goniophlebium amoenum (Wall. ex Mett.) J. Sm. ex Bedd.

Distribution: China. Anhui, Guangxi, Guangdong, Guizhou, Hubei, Hunan, Jiangxi, Shanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Laos, Myanmar (Burma), Nepal, Thailand, Vietnam]. *Specimen: Meili Team 27854* (PYU, SABG). *Use(s):* none documented.

Goniophlebium niponicum (Mett.) Bedd.

Distribution: China. Taiwan, Fujian, Zhejiang, Jiangsu, Anhui, Jiangxi, Hubei, Hunan, Gansu, Guangdong, Guangxi, Guizhou, Shanxi, Sichuan, Yunnan, Xizang (Tibet), Yunnan [India, Japan, Vietnam]. *Specimen: Zhu Weiming 21082* (PYU). *Use(s):* none documented.

Goniophlebium subamoenum (C. B. Clarke) Bedd.

Distribution: China. Xizang (Tibet), Yunnan. [Nepal, Sikkim] *Specimen: Meili Team 26022* (PYU, SABG). *Use(s):* none documented.

Gymnocarpium Newman

Gymnocarpium jessoense (Koidz.) Koidz.

Distribution: China. Heilongjiang, Jilin, Liaoning, Nei Mongol, Hebei, Shanxi, Henan, Shaanxi, Ningxia, Gansu, Qinghai, Xinjiang, Sichuan, Guizhou, Yunnan, Xizang (Tibet) [Afghanistan, Pakistan, India, Nepal, Sikkim, Korea, Japan, Russia; North America]. *Specimen: Meili Team 26116* (PYU, SABG). *Use(s):* none documented.

Haplopteris C. Presl

Haplopteris mediosora (Hayata) X. C. Zhang

Distribution: China. Sichuan, Taiwan, Yunnan, Xizang (Tibet), Yunnan [Nepal, the Philippines]. *Specimen: Meili Team 28210* (PYU, SABG). *Use(s):* none documented.

Hippochaete Milde—see *Equisetum*

Hymenophyllum Sm.

Hymenophyllum exsertum Wall. ex Hook.
Distribution: China. Hainan, Hong Kong, Sichuan, Yunnan [Cambodia, India, Laos, Malaysia, Myanmar (Burma), Nepal, Sri Lanka, Thailand, Vietnam]. *Specimen: Feng Guomei 5585* (KUN). *Use(s):* none documented.

Hymenophyllum longissimum (Ching & P. S. Chiu) K. Iwats.
Distribution: China. Yunnan. *Specimen: Fang Zhendong 1695* (SABG). *Use(s):* none documented.

Hymenophyllum paniculiflorum C. Presl
Distribution: China. Yunnan. *Specimen: Meili Team 25570* (PYU, SABG). *Use(s):* none documented.

Hymenophyllum polyanthos Sw.
Distribution: China. Fujian, Guangdong, Guizhou, Hainan, Jiangxi, Sichuan, Taiwan, Yunnan [India, Indonesia, Japan, Korea, Nepal, Sikkim, Sri Lanka; tropical regions worldwide]. *Specimen: Meili Team 28208* (PYU, SABG). *Use(s):* none documented.

Hymenophyllum simonsianum Hook.
Distribution: China. Taiwan, Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Feng Guomei 6442* (KUN). *Use(s):* none documented.

Hypodematium Kunze

Hypodematium crenatum (Forssk.) Kuhn
Distribution: China. Anhui, Gansu, Guangdong, Guangxi, Guizhou, Henan, Taiwan, Sichuan, Yunnan [India, Japan, Malaysia, Myanmar (Burma), the Philippines; Africa, subtropical Asia]. *Specimen: Fang Zhendong & Zhang Canming 2381* (SABG). *Use(s):* medicinal.

Lepisorus Ching

Lepisorus albertii (Regal) Ching
Distribution: China. Gansu, Hebei, Henan, Nei Mongal, Qinhai, Shaanxi, Shanxi, Sichuan, Taiwan, Yunnan, Xinjiang, Xizang (Tibet). *Specimen: Meili Team 25135* (PYU, SABG). *Use(s):* none documented.

Lepisorus bicolor (Takeda) Ching
Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 28128* (PYU, SABG). *Use(s):* none documented.

Lepisorus contortus (H. Christ) Ching
Distribution: China. Anhui, Fujian, Gansu, Henan, Hubei, Jiangxi, Shaanxi, Sichuan, Yunnan, Zhejiang. *Specimen: Meili Team 27859* (PYU, SABG). *Use(s):* medicinal.

Lepisorus macrosphaerus (Baker) Ching
Distribution: China. Guizhou, Hubei, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Fang Zhendong & Zhang Canming 2479. Use(s):* none documented.

Lepisorus miyoshianus (Makino) Fraser-Jenk.
Distribution: China. Guangdong, Guizhou, Hubei, Hunan, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [India, Japan]. *Specimen: Meili Team 27280* (PYU, SABG). *Use(s):* medicinal.

Lepisorus morrisonensis (Hayata) H. Itô
Distribution: China. Sichuan, Taiwan, Xizang (Tibet), Yunnan [India, Nepal, Sikkim]. *Specimen: Meili Team 26123* (PYU, SABG). *Use(s):* medicinal.

Lepisorus oligolepidus (Baker) Ching
Distribution: China. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hunan, Jiangxi, Shaanxi, Sichuan, Xizang (Tibet), Yunnan, Zhejiang [Japan]. *Specimen: Zhu Weiming 23720* (PYU). *Use(s):* none documented.

Lepisorus pseudoclathratus Ching & S. K. Wu
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26667* (PYU, SABG). *Use(s):* none documented.

Lepisorus pseudonudus Ching
Distribution: China. Gansu, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26458* (PYU, SABG). *Use(s):* medicinal.

Lepisorus soulieanus (H. Christ) Ching & S. K. Wu
Distribution: China. Guangxi, Sichuan, Yunnan. *Specimen: Meili Team 27985* (PYU, SABG). *Use(s):* none documented.

Lepisorus subconfluens Ching
Distribution: China. Yunnan. *Specimen: Fang Zhendong 1820* (SABG). *Use(s):* none documented.

Lepisorus thunbergianus (Kaulf.) Ching
Distribution: China. Anhui, Fujian, Gansu, Guizhou, Hebei, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Taiwan, Yunnan, Xizang (Tibet), Zhejiang [Japan, Korea, the Philippines]. *Specimen: Jan Salick 9638* (MO, SABG). *Use(s):* none documented.

Lepisorus tibeticus Ching & S. K. Wu
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26499* (PYU, SABG); *Danica Anderson 289* (MO, SABG). *Use(s):* medicinal.

Loxogramme (Blume) C. Presl

Loxogramme duclouxii H. Christ
Distribution: China. Anhui, Chongqing, Gansu, Shaanxi, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [India, Thailand, Vietnam, Korea, Japan]. *Specimen: Fang Zhendong & Zhang Canming 2530* (SABG). *Use(s):* none documented.

Lunathyrium Koidz.—see *Deparia*

Lunathyrium auriculatum W. M. Chu & Z. R. Wang ex Z. R. Wang
Distribution: China. Sichuan, Yunnan. *Specimen: Zhu Weiming 20748* (PYU). *Use(s):* none documented.

Lunathyrium brevipinnum Ching & K. H. Shing ex Z. R. Wang
Distribution: China. Yunnan. *Specimen: Meili Team 28032* (PYU, SABG). *Use(s):* none documented.

Lunathyrium medogense Ching & S. K. Wu
Distribution: China. Xizang (Tibet), Yunnan. *Specimen: Meili Team 28221* (PYU, SABG). *Use(s):* none documented.

Lunathyrium wilsonii (H. Christ) Ching
Distribution: China. Gansu, Guizhou, Hubei, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Fang Zhendong 1694* (SABG). *Use(s):* none documented.

Matteuccia Tod.

Matteuccia intermedia C. Chr.
Distribution: China. Hebei, Hubei, Shanxi, Yunnan [India, Nepal, Sikkim]. *Specimen: Danica Anderson 381B* (MO, SABG). *Use(s):* medicinal, religious, construction.

Matteuccia struthiopteris (L.) Tod.
Distribution: China. Gansu, Hebei, Heilongjiang, Henan, Hubei, Jilin, Liaoning, Nei Mongol, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Japan, Korea, Russia; Europe, North America]. *Specimen: Meili Team 25716* (PYU, SABG). *Use(s):* food, medicinal.

Metathelypteris (H. Itô) Ching—see *Thelypteris*

Neocheiropteris H. Christ—see *Neolepisorus*

Neolepisorus Ching

Neolepisorus ensatus (Thunb.) Ching
Distribution: China. Guizhou, Sichuan, Taiwan, Xinjiang, Yunnan [Korea, Japan] *Specimen: Zhu Weiming 21079* (PYU). *Use(s):* none documented.

Onoclea orientalis (Hook.) Hook.
Distribution: China. Anhui, Guangdong, Gansu, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangxi, Shanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [India, Japan, Korea, Russia]. *Specimen: Fang Zhendong 1774* (SABG). *Use(s):* none documented.

Onychium Kaulf.

Onychium contiguum Wall ex C. Hope
Distribution: China. Gansu, Guizhou, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Bhutan, Cambodia, India, Laos, Myanmar (Burma), Nepal, Sikkim, Thailand, Vietnam]. *Specimen: Fang Zhendong 1601* (SABG). *Use(s):* none documented.

Onychium japonicum (Thunb.) Kunze
Distribution: China. Anhui, Fujian, Gansu, Guangxi, Guizhou, Hebei (Xinle), Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shangdong, Sichuan, Taiwan, Yunnan, Zhejiang [Indonesia, Japan, the Philippines; Pacific Islands]. *Specimen: Zhu Weiming 21033* (PYU). *Use(s):* none documented.

Ophioglossum L.

Ophioglossum vulgatum L.
Distribution: China. Taiwan, Yunnan [Mongolia, Russia; Europe, North America, Africa]. *Specimen: Zhu Weiming 23735* (PYU). *Use(s):* medicinal.

Osmunda L.

Osmunda claytoniana L.
Distribution: China. Liaoning, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Russia]. *Specimens: Fang Zhendong 1606* (PYU). *Use(s):* none documented.

Paraceterach Copel.—see *Paragymnopteris* K. H. Shing

Paragymnopteris K. H. Shing

Paragymnopteris bipinnata (H. Christ) K. H. Shing
Distribution: China. Gansu, Hebei, Henan, Hubei, Nei Mongol, Shaanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25758* (PYU, SABG). *Use(s):* food, medicinal.

Paragymnopteris delavayi (Baker) K. H. Shing
Distribution: China. Gansu, Guizhou, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Fang Zhendong 1563* (SABG). *Use(s):* none documented.

Paragymnopteris marantae (L.) K. H. Shing
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [India, Nepal; Europe]. *Specimen: Fang Zhendong 1549* (SABG). *Use(s):* medicinal.

Paragymnopteris sargentii (H. Christ) K. H. Shing
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Zhu Weiming 17205* (PYU). *Use(s):* none documented.

Paragymnopteris vestita (Hook.) K. H. Shing
Distribution: China. Guizhou, Hebei, Shanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan [India, Nepal, Pakistan, Thailand]. *Specimen: Zhu Weiming 17189* (PYU). *Use(s):* medicinal.

Parathelypteris (H. Itô) Ching—see *Thelypteris*

Pellaea Link

Pellaea mairei Brause
Distribution: China. Guizhou, Hunan, Shaanxi, Sichuan, Yunnan. *Specimen: Meili Team 28119* (PYU, SABG). *Use(s):* none documented.

Phegopteris (C. Presl) Fée

Phegopteris connectilis (Michx.) Watt
Distribution: China. Guizhou, Heilongjiang, Henan, Jilin, Liaoning, Shaanxi, Sichuan, Yunnan [Mongolia, Russia; Europe, North America]. *Specimen: Zhu Weiming 23786* (PYU). *Use(s):* none documented.

Phymatopteris Pic. Serm.

Phymatopteris chrysotricha (C. Chr.) Pic. Serm.
Distribution: China. Yunnan [Myanmar (Burma)]. *Specimen: Fang Zhendong 3386* (SABG). *Use(s):* none documented.

Phymatopteris crenatopinnata (C. B. Clarke) Pic. Serm.
Distribution: China. Guangxi, Guizhou, Hunan, Xizang (Tibet), Yunnan [India]. *Specimen: Fang Zhendong 1552* (SABG). *Use(s):* none documented.

Phymatopteris dactylina (H. Christ) Pic. Serm.
Distribution: China. Sichuan, Yunnan, Zhejiang. *Specimen: Zhu Weiming 21083* (PYU). *Use(s):* none documented.

Phymatopteris ebenipes (Hook.) Pic. Serm.
Distribution: China. Hunan, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Meili Team 28134* (PYU, SABG). *Use(s):* none documented.

Phymatopteris glaucopsis (Franch.) Pic. Serm.
Distribution: China. Sichuan, Yunnan [India, Sikkim]. *Specimen: Fang Zhendong 1595* (SABG). *Use(s):* none documented.

Phymatopteris malacodon (Hook.) Pic. Serm.
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Meili Team 28111* (PYU, SABG). *Use(s):* none documented.

Phymatopteris nigropaleacea (Ching) S. G. Lu
Distribution: China. Sichuan, Yunnan. *Specimen: Fang Zhendong & Zhang Canming 2572* (SABG). *Use(s):* none documented.

Phymatopteris nigrovenia (H. Christ) Pic. Serm.
Distribution: China. Hubei, Sichuan, Yunnan. *Specimen: Meili Team 26458* (PYU, SABG). *Use(s):* none documented.

Phymatopteris stracheyi (Ching) Pic. Serm.
Distribution: China. Hubei, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Zhu Weiming 20804* (PYU). *Use(s):* none documented.

Phymatopteris tibetana (Ching & S. K. Wu) W. M. Chu

Distribution: China. Xizang (Tibet), Yunnan. *Specimen: Zhu Weiming 23725* (PYU). *Use(s):* none documented.

Plagiogyria (Kunze) Mett.

Plagiogyria glauca (Blume) Mett.
Distribution: China. Taiwan, Xizang (Tibet), Yunnan [India, Indonesia, Malaysia (Borneo), Myanmar (Burma), New Guinea, the Philippines; Pacific Islands]. *Specimen: Fang Zhendong 1806* (SABG). *Use(s):* none documented.

Platygyria Ching & S. K. Wu

Platygyria ×inaequibasis Ching & S. K. Wu
Distribution: China. Yunnan. *Specimen: Fang Zhendong 1839* (SABG). *Use(s):* none documented.

Platygyria variabilis Ching & S. K. Wu
Distribution: China. Yunnan. *Specimen: Meili Team 25872* (PYU, SABG). *Use(s):* none documented.

Polypodiodes Ching—see *Goniophlebium*

Polystichum Roth

Polystichum acanthophyllum (Franch.) H. Christ
Distribution: China. Sichuan, Taiwan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Meili Team 27512* (PYU, SABG). *Use(s):* medicinal.

Polystichum atkinsonii Bedd.
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Feng Guomei 4042* (KUN). *Use(s):* none documented.

Polystichum bakerianum (Atk. ex C. B. Clarke) Diels
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [India, Nepal, Sikkim]. *Specimen: Meili Team 27979* (PYU, SABG). *Use(s):* none documented.

Polystichum brachypterum (Kunze) Ching
Distribution: China. Gansu, Guizhou, Sichuan, Xizang (Tibet), Yunnan [Bhutan, Nepal, Sikkim, Kashmir]. *Specimen: Fang Zhendong 1810* (SABG). *Use(s):* medicinal, religious, construction.

Polystichum capillipes (Baker) Diels
Distribution: China. Guizhou, Sichuan, Yunnan. *Specimen: Meili Team 25127* (PYU, SABG). *Use(s):* none documented.

Polystichum duthiei (C. Hope) C. Chr.
Distribution: China. Gansu, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal]. *Specimen: Meili Team 27929* (PYU, SABG). *Use(s):* none documented.

Polystichum glaciale H. Christ
Distribution: China. Gansu, Qinghai, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Bhutan, India]. *Specimen: Fang Zhendong 1693* (SABG). *Use(s):* none documented.

Polystichum gongboense Ching & S. K. Wu
Distribution: China. Hunan, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Fang Zhendong 1883* (SABG). *Use(s):* none documented.

Polystichum lachenense (Hook.) Bedd.
Distribution: China. Gansu, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan [Bhutan, India, Japan, Kashmir, Nepal, Sikkim]. *Specimen: Meili Team 26898* (PYU, SABG). *Use(s):* none documented.

Polystichum macrochlaenum Ching & S. K. Wu
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 28109* (PYU, SABG). *Use(s):* none documented.

Polystichum mayebarae Tagawa
Distribution: China. Gansu, Guizhou, Henan, Hubei, Sichuan, Yunnan, Zhejiang [Japan]. *Specimen: Wu Sugong et al. WB-076* (KUN). *Use(s):* religious, construction.

Polystichum mollissimum Ching
Distribution: China. Gansu, Hebei, Nei Mongol, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: George Yatskievych 04-018* (MO). *Use(s):* none documented.

Polystichum moupinense (Franch.) Bedd.
Distribution: China. Gansu, Hubei, Shaanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Fang Zhendong 1602* (SABG). *Use(s):* none documented.

Polystichum nigrum Ching & H. S. Kung
Distribution: China. Sichuan, Yunnan. *Specimen: Fang Zhendong 1833B* (SABG). *Use(s):* none documented.

Polystichum orientalitibeticum Ching
Distribution: China. Xizang (Tibet), Yunnan.

Specimen: Meili Team 25507 (PYU, SABG). *Use(s):* none documented.

Polystichum piceopaleaceum Tagawa
Distribution: China. Gansu, Guizhou, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Afghanistan, India, Japan, Kashmir, Myanmar (Burma), Nepal, Sri Lanka]. *Specimen: Fang Zhendong 1809* (SABG). *Use(s):* none documented.

Polystichum pseudocastaneum Ching & S. K. Wu
Distribution: China. Xizang (Tibet), Yunnan. *Specimen: Meili Team 26510* (PYU, SABG). *Use(s):* none documented.

Polystichum qamdoense Ching & S. K. Wu
Distribution: China. Gansu, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26505* (PYU, SABG). *Use(s):* none documented.

Polystichum rufopaleaceum Ching
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 28195* (PYU, SABG). *Use(s):* none documented.

Polystichum salwinense Ching & H. S. Kung
Distribution: China. Yunnan. *Specimen: Fang Zhendong 1799* (SABG). *Use(s):* none documented.

Polystichum shensiense H. Christ
Distribution: China. Gansu, Shaanxi, Sichuan, Yunnan. *Specimen: Fang Zhendong 1615* (SABG). *Use(s):* none documented.

Polystichum sinense (H. Christ) H. Christ
Distribution: China. Gansu, Qinghai, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Pakistan]. *Specimen: Meili Team 25773* (PYU, SABG). *Use(s):* none documented.

Polystichum stenophyllum H. Christ
Distribution: China. Gansu, Hubei, Sichuan, Taiwan, Xizang (Tibet), Yunnan [India, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 28226* (PYU, SABG). *Use(s):* none documented.

Polystichum thomsonii (Hook. f.) Bedd.
Distribution: China. Gansu, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Bhutan, India, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 26195* (PYU, SABG). *Use(s):* none documented.

Polystichum tsus-simense (Hook.) J. Sm.
Distribution: China. Fujian, Gansu, Henan, Hubei, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Japan, Korea, Vietnam]. *Specimen: Fang Zhendong 1762* (SABG); *Zhu Weiming 23715* (PYU). *Use(s):* none documented.

Pronephrium C. Presl—see *Cyclosorus*

Pseudocystopteris Ching—see *Athyrium*

Pseudocystopteris atuntzeensis Ching
Distribution: China. Yunnan. *Specimen: Yu Dejun 9527* (KUN). *Use(s):* none documented.

Pseudophegopteris Ching

Pseudophegopteris levingei (C. B. Clarke) Ching
Distribution: China. Gansu, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [India, Kashmir, Sikkim]. *Specimen: Fang Zhendong 1596* (SABG). *Use(s):* none documented.

Pseudophegopteris microstegia (Hook.) Ching
Distribution: China. Chongqing (Nanchuan), Sichuan, Xizang (Tibet), Yunnan [India]. *Specimen: Fang Zhendong 1771B* (SABG). *Use(s):* none documented.

Pseudophegopteris pyrrhorachis (Kunze) Ching
Distribution: China. Guizhou, Hubei, Sichuan, Yunnan [India, Myanmar (Burma)]. *Specimen: Meili Team 28186* (PYU, SABG). *Use(s):* none documented.

Pteridium Gled. ex Scope

Pteridium aquilinum (L.) Kuhn
Distribution: China. Widespread [Japan; Europe, North America]. *Specimen: Meili Team 25401* (PYU, SABG). *Use(s):* food, medicinal, alcoholic beverage.

Pteridium revolutum (Blume) Nakai
Distribution: China. Gansu, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [widely distributed in tropical and subtropical Asia]. *Specimen: Fang Zhendong & Zhang Canming 2418* (SABG). *Use(s):* food, medicinal, alcoholic beverage.

Pteris L.

Pteris cretica L.
Distribution: China. Chongqing, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei,

Hunan, Jiangxi, Shaanxi, Sichuan, Xizang (Tibet), Yunnan, Zhejiang [Cambodia, India, Japan, Laos, Nepal, the Philippines, Sri Lanka, Vietnam; Pacific Islands, Africa, Europe]. *Specimen: George Yatskievych 04-205* (KUN, MO). *Use(s):* medicinal.

Pteris dactylina Hook. f.
Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan [India, Sikkim]. *Specimen: George Yatskievych et al. 04-089* (KUN, MO). *Use(s):* medicinal.

Pteris excelsa Gaudich.
Distribution: China. Chongqing, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [India, Japan, Korea, Laos, Malaysia, Nepal, Pakistan, the Philippines, Vietnam; Pacific Islands]. *Specimen: Zhu Weiming 21075* (PYU). *Use(s):* medicinal.

Pteris pseudodactylina Ching & S. K. Wu
Distribution: China. Xizang (Tibet), Yunnan. *Specimen: Wu Sugong 130* (KUN). *Use(s):* none documented.

Pteris vittata L.
Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [widely distributed in Europe, Africa, Asia]. *Specimen: Meili Team 26461* (PYU, SABG). *Use(s):* medicinal.

Pyrrosia Mirb.

Pyrrosia drakeana (Franch.) Ching
Distribution: China. Gansu, Guangxi, Guizhou, Henan, Hubei, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [India]. *Specimen: Meili Team 24898* (PYU, SABG). *Use(s):* medicinal.

Pyrrosia gralla (Giesenh.) Ching
Distribution: China. Guizhou, Sichuan, Taiwan, Yunnan. *Specimen: Meili Team 24897* (PYU, SABG). *Use(s):* medicinal.

Pyrrosia nudicaulis Ching
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Zhu Weiming 20712* (PYU). *Use(s):* none documented.

Pyrrosia porosa (C. Presl) Hovenkamp
Distribution: China. Guangxi, Guizhou, Hainan, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Bhutan, India, Myanmar (Burma), the Philippines, Sri Lanka, Thailand, Vietnam]. *Specimen: Fang Zhendong 1760* (SABG). *Use(s):* medicinal.

Sorolepidium Christ—see *Polystichum*

Thelypteris Shmidel

Thelypteris beddomei (Baker) Ching
Distribution: China. Taiwan, Yunnan, Zhejiang [India, Indonesia, Japan, Malaysia, the Philippines]. *Specimen: Zhu Weiming 21040* (PYU). *Use(s):* none documented.

Thelypteris hattorii (H. Itô) Tagawa
Distribution: China. Anhui, Fujian, Guangxi, Hunan, Jiangxi, Sichuan, Yunnan, Zhejiang [Japan]. *Specimen: Kurt Hoffmeister, Deng Zhiwei & Anthony Amend 31* (MO, SABG). *Use(s):* medicinal.

Woodsia R. Br.

Woodsia andersonii (Bedd.) H. Christ
Distribution: China. Gansu, Qinghai, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Sikkim]. *Specimen: Meili Team 26214* (PYU, SABG). *Use(s):* none documented.

Woodsia cycloloba Hand.-Mazz.
Distribution: China. Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Nepal]. *Specimen: Meili Team 26294* (PYU, SABG). *Use(s):* none documented.

Woodsia lanosa Hook.
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [India]. *Specimen: Meili Team 27994A* (PYU, SABG). *Use(s):* none documented.

Woodsia rosthorniana Diels
Distribution: China. Hebei, Liaoning, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan]. *Specimen: Meili Team 27417* (PYU, SABG). *Use(s):* none documented.

Woodwardia Sm.

Woodwardia unigemmata (Makino) Nakai
Distribution: China. Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Shanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Bhutan, India, Japan, Myanmar (Burma), Nepal, the Philippines, Vietnam]. *Specimen: George Yatskievych 04-02A* (KUN, MO). *Use(s):* none documented.

GYMNOSPERMS

Cupressaceae

Cupressus L.

Cupressus duclouxiana B. Hickel
Distribution: China. SW Sichuan, C & NW Yunnan, SE Xizang (Tibet). *Specimen: Meili Team 24783* (PYU, SABG). *Use(s):* religious, handcrafts, tools, firewood.

Juniperus L.

Juniperus chinensis L.
Distribution: China. Anhui, Fujian, S Gansu, Guangdong, N Guangxi, Guizhou, Hebei, Heilongjiang, Henan, W Hubei, Hunan, Jiangsu, Jiangxi, Nei Mongol, S Shaanxi, Shandong, Shanxi, Sichuan, E Taiwan, Yunnan, Zhejiang [Japan, Korea, Myanmar (Burma), E Russia]. *Specimen: Meili Team 25781* (PYU, SABG). *Use(s):* medicinal, handcrafts.

Juniperus formosana Hayata
Distribution: China. S Anhui, W Fujian, E Gansu, Guizhou, W Hubei, S Hunan, S Jiangsu, Jiangxi, NE Qinghai, S Shaanxi, Sichuan, Taiwan, S Xizang (Tibet), Yunnan, Zhejiang. *Specimen: Meili Team 25839* (PYU, SABG). *Use(s):* none documented.

Juniperus indica Bertol.
Distribution: China. E & S Xizang (Tibet), NW Yunnan [Bhutan, N India, Kashmir, Nepal, Sikkim]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Ephedra likiangensis. Photograph by Fang Zhendong.

Juniperus pingii W. C. Cheng ex Ferré
Distribution: China. S Gansu, NW Hubei, S Qinghai, S Shaanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25067* (PYU, SABG). *Use(s):* handcrafts, construction.

Juniperus recurva Buch.-Ham. ex D. Don
Distribution: China. SE Xizang (Tibet), NW Yunnan [Afghanistan, Bhutan, N India, Kashmir, N Myanmar (Burma), Nepal, Pakistan, Sikkim]. *Specimen: Meili Team 27524* (PYU, SABG). *Use(s):* medicinal.

Juniperus saltuaria Rehder & E. H. Wilson
Distribution: China. S Gansu, SE Qinghai, W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 24734* (PYU, SABG). *Use(s):* religious, firewood, construction, handcrafts.

Juniperus squamata Buch.-Ham. ex D. Don
Distribution: China. S Anhui, W Fujian, S Gansu, E Guizhou, W Hubei, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, N India, Kashmir, N Myanmar (Burma), Nepal, Pakistan, Sikkim]. *Specimen: Fang Zhendong & He Guang 475* (SABG). *Use(s):* religious, medicinal.

Platycladus Spach

Platycladus orientalis (L.) Franco
Distribution: China. Native in S Gansu, Hebei, Henan, Shaanxi, Shanxi; introduced or status uncertain in Anhui, Fujian, N Guangdong, N Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, S Nei Mongol, Shandong, Sichuan, Xizang (Tibet), Yunnan, Zhejiang [Korea, E Russia]. *Specimen: Kurt Hoffmeister, Deng Zhiwei & Anthony Amend 127* (MO). *Use(s):* medicinal, religious, construction, tools, resin, firewood.

Ephedraceae

Ephedra L.

Ephedra gerardiana Wall. ex C. A. Mey.
Distribution: China. Qinghai, Xinjiang, Xizang (Tibet), Yunnan [Afghanistan, N India, Nepal, Pakistan, Sikkim, Tajikistan]. *Specimen: Meili Team 27511* (PYU, SABG). *Use(s):* medicinal.

Ephedra likiangensis Florin
Distribution: China. W Guizhou, W Sichuan,

E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25457* (PYU, SABG). *Use(s):* medicinal.

Pinaceae

Abies Mill.

Abies ernestii Rehder

Distribution: China. SW Gansu, W Hubei, N & W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Danica Anderson 295* (MO, SABG). *Use(s):* medicinal, construction, firewood.

Abies georgei Orr

Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Jessica Woo 534* (MO, SABG). *Use(s):* construction, firewood.

Larix Mill.

Larix potaninii Batalin

Distribution: China. S Gansu, S Shaanxi, Sichuan, SE Xizang (Tibet), N Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* construction.

Larix speciosa W. C. Cheng & Y. W. Law

Distribution: China. SE Xizang (Tibet), NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Picea A. Dietr.

Picea brachytyla (Franch.) E. Pritz.

Distribution: China. S Gansu, W Henan, W Hubei, SE Shaanxi, Sichuan, SE Xizang (Tibet), NW Yunnan [Bhutan, N Myanmar (Burma)]. *Specimen: Jessica Woo 562B* (SABG). *Use(s):* religious, construction, handcrafts, firewood, forestry.

Picea likiangensis (Franch.) E. Pritz.

Distribution: China. S Qinghai, S & W Sichuan, E Xizang (Tibet), NW Yunnan [Bhutan]. *Specimen: George Yatskievych 04-095* (KUN, MO). *Use(s):* religious, construction, handcrafts, firewood, forestry.

Pinus L.

Pinus armandii Franch.

Distribution: China. S Gansu, C & NW Guizhou, Hainan, SW Henan, W Hubei, S Shaanxi, S Shanxi, Sichuan, C Taiwan, SE Xizang (Tibet), Yunnan [N Myanmar (Burma)]. *Specimen: George Yatskievych 04-094* (SABG). *Use(s):* food, religious, construction, resin.

Pinus densata Mast.

Distribution: China. S Qinghai, W Sichuan, SE Xizang (Tibet), Yunnan. *Specimen: Jessica Woo 509* (SABG). *Use(s):* medicinal, construction, resin.

Pinus yunnanensis Franch.

Distribution: China. Guangxi, Guizhou, SW Sichuan, SE Xizang (Tibet), Yunnan. *Specimen: George Yatskievych 04-084* (KUN, MO). *Use(s):* religious, construction, firewood, forestry.

Pseudotsuga Carrière

Pseudotsuga forrestii Craib

Distribution: China. Yunnan. *Specimen: George Yatskievych 04-026* (SABG). *Use(s):* religious, construction, firewood.

Tsuga (Endl.) Carrière

Tsuga dumosa (D. Don) Eichler

Distribution: China. Sichuan, S Xizang (Tibet), N & W Yunnan [Bhutan, N India, N Myanmar (Burma), Nepal, Sikkim, N Vietnam]. *Specimen: Fang Zhendong 03-25* (SABG). *Use(s):* construction, firewood.

Taxaceae

Taxus L.

Taxus wallichiana Zucc.

Distribution: China. S Anhui, Fujian, S Gansu, N Guangdong, N Guangxi, Guizhou, W Henan, W Hubei, Hunan, Jiangxi, S Shaanxi, Sichuan, Taiwan, SE Xizang (Tibet), Yunnan, Zhejiang [Bhutan, N India, Myanmar (Burma), Sikkim, Vietnam]. *Specimen: Meili Team 25704* (PYU, SABG). *Use(s):* medicinal, handcrafts, firewood.

ANGIOSPERMS

Aceraceae—see Sapindaceae

Acoraceae

Acorus L.

Acorus calamus L.

Distribution: China. Throughout [Asia, Europe, North America]. *Specimen: Meili Team 24706* (PYU, SABG). *Use(s):* medicinal.

Actinidiaceae

Actinidia Lindl.

Actinidia venosa Rehder

Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 27340* (PYU, SABG). *Use(s):* none documented.

Adoxaceae

Sambucus L.

Sambucus adnata Wall. ex DC.

Distribution: China. Gansu, Guizhou, Ningxia, Qinghai, Shaanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Fang Zhendong 1104* (SABG). *Use(s):* medicinal.

Sambucus javanica Blume (syn. *Sambucus chinensis* Lindl.)

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Japan]. *Specimen: Danica Anderson, Jan Salick, Bee Gunn & Yin Xuezhan 351* (MO, SABG). *Use(s):* forage and/or fodder.

Viburnum L.

Viburnum atrocyaneum C. B. Clarke

Distribution: China. NW Guangxi, Guizhou, Sichuan, SE Xizang (Tibet), Yunnan [Bhutan, N India, Myanmar (Burma), N Thailand]. *Specimen: Meili Team 27203* (PYU, SABG). *Use(s):* none documented.

Viburnum betulifolium Batalin

Distribution: China. Anhui, Gansu, Guangxi, Guizhou, W Henan, W Hubei, S Ningxia, S Shaanxi, Sichuan, Taiwan, SE Xizang (Tibet), Yunnan, NW Zhejiang. *Specimen: Meili Team 24847* (PYU, SABG). *Use(s):* medicinal, firewood. tools.

Viburnum congestum Rehder

Distribution: China. Gansu, NE Guizhou, SW Sichuan, Yunnan. *Specimen: Meili Team 27213A* (PYU, SABG). *Use(s):* none documented.

Viburnum cylindricum Buch.-Ham. ex D. Don

Distribution: China. Gansu, N Guangdong, Guangxi, Guizhou, W Hubei, W Hunan, Sichuan, SE Xizang (Tibet), Yunnan [Bhutan, India, Indonesia, N Myanmar (Burma), Nepal, Pakistan, Thailand, Vietnam]. *Specimen: Fang Zhendong 1803* (SABG). *Use(s):* medicinal.

Viburnum glomeratum Maxim.

Distribution: China. W Anhui, S Gansu, W Henan, W Hubei, Jiangxi, S Ningxia, E Shaanxi, Sichuan, SE Xizang (Tibet), NW Yunnan, NW Zhejiang [N Myanmar (Burma)]. *Specimen: Meili Team 24713* (PYU, SABG). *Use(s):* medicinal, handcrafts, tools.

Viburnum kansuense Batalin

Distribution: China. Gansu, Shaanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Fang Zhendong 1582* (SABG). *Use(s):* medicinal, forage and/or fodder, firewood.

Viburnum nervosum D. Don

Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, N Myanmar (Burma), Nepal, N Vietnam]. *Specimen: Fang Zhendong 1790* (SABG). *Use(s):* medicinal.

Amaranthaceae

Alternanthera Forssk.

Alternanthera pungens Kunth

Distribution: China. Widely naturalized [worldwide]. *Specimen: Meili Team 26041* (PYU, SABG). *Use(s):* none documented.

Amaranthus L.

Amaranthus hybridus L.

Distribution: China. Anhui, Fujian, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Yunnan, Zhejiang [Bhutan, Japan, Laos, Nepal, Sikkim, Vietnam; Europe, North America, South America]. *Specimen: George Yatskievych, Jan Salick, Ben Staver & Liqing Wangcuo 04-178* (MO, SABG). *Use(s):* none documented.

Amaranthus retroflexus L.

Distribution: China. Widespread [adventive worldwide]. *Specimen: Meili Team s.n.* (PYU, SABG). *Use(s):* none documented.

Chenopodium L.

Chenopodium album L.

Distribution: China. Widespread [adventive

worldwide]. *Specimen: Meili Team 26627* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Dysphania R. Br.

Dysphania schraderiana (Schult.) Mosyakin & Clemants

Distribution: China. Gansu, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan [Africa, SW Asia, S Europe; naturalized in North America and locally elsewhere]. *Specimen: Meili Team 26929* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Salsola L.

Salsola collina Pall.

Distribution: China. Anhui, Gansu, Guizhou, Hebei, Heilongjiang, Henan, Hunan, Jiangsu, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Korea, Mongolia, Pakistan, Russia; C Asia, naturalized in C & W Europe & North America]. *Specimen: Meili Team 26053* (PYU, SABG). *Use(s):* food, medicinal, forage and/or fodder.

Amaryllidaceae

Allium L.

Allium beesianum W. W. Sm.

Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Meili Team 26562* (PYU, SABG). *Use(s):* herb and/or spice.

Allium cepa L.

Distribution: cultivated. Report based on Fang Zhendong, pers. obs. *Use(s):* food.

Allium forrestii Diels

Distribution: China. SW Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Heidi Schmidt 4071* (MO, SABG). *Use(s):* none documented.

Allium macranthum Baker

Distribution: China. SW Gansu, S Shaanxi, SW Sichuan, S Xizang (Tibet), NW Yunnan [Bhutan, Sikkim]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Allium macrostemon Bunge

Distribution: China. Widespread [Japan, Korea, Mongolia, Russia]. *Specimen: Meili Team 25274* (PYU, SABG). *Use(s):* medicinal.

Allium ovalifolium Hand.-Mazz.

Distribution: China. SE Gansu, NE Guizhou, W Hubei, E Qinghai, S Shaanxi, Sichuan, NW Yunnan. *Specimen: Meili Team 24989* (PYU, SABG). *Use(s):* none documented.

Allium plurifoliatum Rendle

Distribution: China. SE Anhui, Gansu, NW Hubei, Shaanxi, Sichuan. *Specimen: Yu Hong 28341* (SABG). *Use(s):* food.

Allium prattii C. H. Wright

Distribution: China. Anhui, Gansu, Henan, Qinghai, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Heidi Schmidt 4085* (MO, SABG). *Use(s):* medicinal.

Allium sativum L.

Distribution: China. Cultivated. *Specimen: George Yatskievych 04-045* (KUN, MO). *Use(s):* food.

Allium schoenoprasum L.

Distribution: China. Xinjiang, Yunnan [India, Japan, Kazakhstan, Korea, Mongolia, Pakistan, Russia; SW Asia, Europe, North America]. Report based on Fang Zhendong, pers. obs. *Use(s):* herb and/or spice.

Allium sikkimense Baker

Distribution: China. S Gansu, S Ningxia, E & S Qinghai, SW Shaanxi, W Sichuan, SE Xizang (Tibet), NW Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Meili Team 26001* (PYU, SABG). *Use(s):* none documented.

Allium wallichii Kunth

Distribution: China. Guangxi, Guizhou, S Hunan, SW Sichuan, SE Xizang (Tibet), NW Yunnan [Bhutan, India, Myanmar (Burma), Nepal, Sikkim]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Anacardiaceae

Pistacia L.

Pistacia weinmannifolia J. Poiss. ex Franch.

Distribution: China. SW Guangxi, SW Guizhou, SW Sichuan, SE Xizang (Tibet), Yunnan [N Myanmar (Burma)]. *Specimen: Fang Zhendong 2003-21* (SABG). *Use(s):* food, medicinal, forage and/or fodder.

Toxicodendron Mill.

Toxicodendron radicans (L.) Kuntze
Distribution: China. Guizhou, Hubei, Hunan, Sichuan, Taiwan, Yunnan. *Specimen: Jessica Woo, Ruth Sherman & Jan Salick 634* (MO, SABG). *Use(s):* firewood.

Toxicodendron vernicifluum (Stokes) F. A. Barkley
Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Shaanxi, Shandong, Shanxi, Sichuan, Yunnan, Zhejiang [India, Japan, Korea]. *Specimen: Wu Sugong et al. WB-124* (KUN, MO). *Use(s):* handcrafts, oil, medicinal, resin.

Apiaceae

Acronema Falc. ex Edgew.

Acronema minus (M. F. Watson) M. F. Watson & Z. H. Pan
Distribution: China. S Xizang (Tibet), NW Yunnan [Bhutan]. *Specimen: Zhu Weiming 20857A* (PYU). *Use(s):* none documented.

Acronema muscicola (Hand.-Mazz.) Hand.-Mazz.
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26756* (PYU, SABG). *Use(s):* none documented.

Angelica L.

Angelica oncosepala Hand.-Mazz.
Distribution: China. NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Bupleurum L.

Bupleurum longicaule Wall. ex DC.
Distribution: China. S Gansu, W Hubei, Ningxia, Qinghai, Shaanxi, Shanxi, NE & W Sichuan, E Xizang (Tibet), NW Yunnan [India, Kashmir, Nepal, Pakistan]. *Specimen: Meili Team 25671* (PYU, SABG). *Use(s):* medicinal.

Bupleurum marginatum Wall. ex DC.
Distribution: China. S Gansu, Guizhou, Hubei, Qinghai, Sichuan, Xizang (Tibet), Yunnan [Bhutan, NE India, Kashmir, Myanmar (Burma), Nepal, Pakistan, Sikkim]. *Specimen: Meili Team 26054* (PYU, SABG). *Use(s):* medicinal.

Bupleurum triradiatum Adams ex Hoffm.
Distribution: China. Qinghai, W Sichuan, Xinjiang, Xizang (Tibet), NW Yunnan [Russia]. *Specimen: Jessica Woo & Ruth Sherman 430* (MO, SABG). *Use(s):* medicinal.

Carum L.

Carum carvi L.
Distribution: China. Gansu, Hebei, Henan, Jilin, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shandong, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [widespread in Asia, Europe, and the Mediterranean region (introduced elsewhere)]. *Specimen: Meili Team 25178* (PYU, SABG). *Use(s):* medicinal.

Chaerophyllum L.

Chaerophyllum villosum Wall. ex DC.
Distribution: China. SW Sichuan, S Xizang (Tibet), NW Yunnan [Afghanistan, Bhutan, N India, Kashmir, Nepal, Pakistan]. *Specimen: Meili Team 27913* (PYU, SABG). *Use(s):* none documented.

Coriandrum L.

Coriandrum sativum L.
Distribution: China. Widely cultivated and sometimes naturalized [cultivated and adventive worldwide in temperate regions]. Report based on Fang Zhendong, pers. obs. *Use(s):* food.

Daucus L.

Daucus carota L.
Distribution: China. Cultivated throughout [cultivated and adventive worldwide in temperate regions]. Report based on Fang Zhendong, pers. obs. *Use(s):* food.

Ferula L.

Ferula jaeschkeana Vatke
Distribution: China. W Xizang (Tibet), Yunnan [Afghanistan, Bhutan, NE India, W Pakistan; C Asia]. *Specimen: Meili Team 26638* (PYU, SABG). *Use(s):* none documented.

Ferula kingdon-wardii H. Wolff
Distribution: China. NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Ferula olivacea (Diels) H. Wolff ex Hand.-Mazz.
Distribution: China. NW Yunnan. *Specimen: Meili Team 25292* (PYU, SABG). *Use(s):* medicinal.

Heracleum L.

Heracleum candicans Wall. ex DC.

Distribution: China. W Sichuan, E & S Xizang (Tibet), C & N Yunnan [Bhutan, N India, Kashmir, Nepal, Pakistan, Sikkim]. *Specimen: Meili Team 25685* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Heracleum millefolium Diels

Distribution: China. C & SW Gansu, Qinghai, W Sichuan, SE Xizang (Tibet), NW Yunnan [Bhutan]. *Specimen: Meili Team 26412* (PYU, SABG). *Use(s):* medicinal.

Heracleum nepalense D. Don

Distribution: China. N & W Yunnan [Bhutan, NE India, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 27878* (PYU, SABG). *Use(s):* medicinal.

Heracleum oreocharis H. Wolff

Distribution: China. NW Yunnan. *Specimen: Meili Team 26128* (PYU, SABG). *Use(s):* none documented.

Heracleum scabridum Franch.

Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Meili Team 26859* (PYU, SABG). *Use(s):* none documented.

Ligusticum L.

Ligusticum acuminatum Franch.

Distribution: China. Gansu, Henan, Hubei, Hunan, Shaanxi, Sichuan, Yunnan. *Specimen: Meili Team 26129* (PYU, SABG). *Use(s):* medicinal.

Ligusticum daucoides (Franch.) Franch.

Distribution: China. W Hubei, Sichuan, S Xizang (Tibet), N Yunnan. *Specimen: Wayne Law 64* (MO, SABG). *Use(s):* none documented.

Ligusticum delavayi Franch.

Distribution: China. S Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25888.* (PYU, SABG). *Use(s):* medicinal.

Ligusticum hispidum (Franch.) H. Wolff ex Hand.-Mazz.

Distribution: China. W Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26340* (PYU, SABG). *Use(s):* none documented.

Ligusticum likiangense (H. Wolff) F. T. Pu & M. F. Watson

Distribution: China. W Sichuan, NW Yunnan. *Specimen: Meili Team 25997* (PYU, SABG). *Use(s):* none documented.

Ligusticum oliverianum (H. Boissieu) Shan

Distribution: China. Hubei, NE & W Sichuan, S Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 26222.* (PYU, SABG). *Use(s):* none documented.

Ligusticum sinense Oliv.

Distribution: China. Gansu, Guizhou, Henan, Hubei, Jiangxi, Nei Mongol, Shaanxi, Sichuan, Yunnan. *Specimen: Meili Team 27953* (PYU, SABG). *Use(s):* medicinal.

Nothosmyrnium Miq.

Nothosmyrnium japonicum Miq.

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Yunnan, Zhejiang [cultivated and adventive in Japan]. *Specimen: Bee Gunn 156* (MO, SABG). *Use(s):* none documented.

Notopterygium H. Boissieu

Notopterygium franchetii H. Boissieu

Distribution: China. Gansu, Hubei, Nei Mongol, Qinghai, Shaanxi, Shanxi, Sichuan, Yunnan. *Specimen: Meili Team 25310* (PYU, SABG). *Use(s):* none documented.

Osmorhiza Raf.

Osmorhiza aristata (Thunb.) Rydb.

Distribution: China (widely distributed). Yunnan [Bhutan, N India, Japan, Kashmir, Korea, Mongolia, Nepal, Pakistan, Russia (Siberia); North America]. *Specimen: Meili Team 27543* (PYU, SABG). *Use(s):* food, medicinal.

Peucedanum L.

Peucedanum angelicoides H. Wolff ex Kretschmer

Distribution: China. SW Guizhou, NC & SW Sichuan, NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Physospermopsis H. Wolff

Physospermopsis kingdon-wardii (H. Wolff) C. Norman

Distribution: China. SE Xizang (Tibet), NW Yunnan [Bhutan, Nepal, Sikkim]. *Specimen:*

Fang Zhendong 1656 (SABG). *Use(s):* none documented.

Pimpinella L.

Pimpinella candolleana Wight & Arn.
Distribution: China. Guangdong, Guangxi, Guizhou, Sichuan, Yunnan [S India]. *Specimen: Jessica Woo & Ruth Sherman 513* (MO, SABG). *Use(s):* medicinal.

Pimpinella flaccida C. B. Clarke
Distribution: China. W Sichuan, NW Yunnan [NE India]. *Specimen: Meili Team 20857B* (PYU, SABG). *Use(s):* none documented.

Pleurospermum Hoffm.

Pleurospermum amabile Craib. & W. W. Sm.
Distribution: China. SE Xizang (Tibet), NW Yunnan [Bhutan, Sikkim]. *Specimen: Meili Team 26282* (PYU, SABG). *Use(s):* medicinal.

Pleurospermum bicolor (Franch.) C. Norman ex Z. H. Pan & M. F. Watson
Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 26620* (PYU, SABG). *Use(s):* none documented.

Pleurospermum heracleifolium Franch. ex H. Boissieu
Distribution: China. Xizang (Tibet), NW Yunnan. *Specimen: Fang Zhendong 1633* (SABG). *Use(s):* none documented.

Pleurospermum hookeri C. B. Clarke
Distribution: China. Gansu, Qinghai, Sichuan, SE Xizang, NW Yunnan [Bhutan, Nepal, Sikkim]. *Specimen: Meilishi Team 223* (PYU, SABG). *Use(s):* none documented.

Pleurospermum nanum Franch.
Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Fang Zhendong 1714* (SABG). *Use(s):* none documented.

Pleurospermum pulszkyi Kanitz
Distribution: China. Gansu, Qinghai, Xizang (Tibet), NW Yunnan. *Specimen: Danica Anderson, Jan Salick, Bee Gunn & Peiji 205* (MO, SABG). *Use(s):* medicinal.

Pleurospermum wilsonii H. Boissieu
Distribution: China. S Gansu, SE Qinghai, W Sichuan, E Xizang (Tibet), NW Yunnan [Nepal]. *Specimen: Meili Team 26903* (PYU, SABG). *Use(s):* none documented.

Pleurospermum yunnanense Franch.
Distribution: China. W Sichuan, NW Yunnan [NE Myanmar (Burma)]. *Specimen: Fang Zhendong 1631* (SABG). *Use(s):* medicinal.

Pternopetalum Franch.

Pternopetalum cardiocarpum (Franch.) Hand.-Mazz.
Distribution: China. W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25445* (PYU, SABG). *Use(s):* none documented.

Pternopetalum subalpinum Hand.-Mazz.
Distribution: China. NW Yunnan [Bhutan, NE India, Sikkim]. *Specimen: Meili Team 26759* (PYU, SABG). *Use(s):* none documented.

Sanicula L.

Sanicula chinensis Bunge
Distribution: China (widely distributed). Yunnan [N Japan, Korea, Russia (E Siberia)]. *Specimen: Meili Team 27389* (PYU, SABG). *Use(s):* none documented.

Sanicula elata Buch.-Ham. ex D. Don
Distribution: China. Guangxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, N India, Indonesia, Japan, Nepal, Malaysia, Myanmar (Burma), Pakistan, the Philippines, Sri Lanka, Vietnam; E Africa]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Sanicula hacquetioides Franch.
Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 24951* (PYU, SABG). *Use(s):* medicinal.

Sinolimprichtia H. Wolff

Sinolimprichtia alpina H. Wolff
Distribution: China. Qinghai, SW Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Fang Zhendong 1046* (SABG). *Use(s):* medicinal.

Torilis Adans.

Torilis japonica (Houtt.) DC
Distribution: China. Yunnan, adventive widely [adventive in Asia and Europe]. *Specimen: Danica Anderson, Jan Salick, Bee Gunn, Yin Xuezhen & Senadorji 326* (MO, SABG). *Use(s):* none documented.

Trachydium Lindl.

Trachydium involucellatum Shan & F. T. Pu
Distribution: China. SE Xizang (Tibet), Yunnan. *Specimen: Jessica Woo, Ruth Sherman & Jan Salick 669* (MO, SABG). *Use(s):* medicinal.

Vicatia DC.

Vicatia thibetica H. Boissieu
Distribution: China. Qinghai, W Sichuan, E & S Xizang (Tibet), Yunnan [Nepal]. *Specimen: Meili Team 26726* (PYU, SABG). *Use(s):* medicinal.

Apocynaceae

Biondia Schltr.

Biondia insignis Tsiang
Distribution: China. Guizhou, Hunan, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Danica Anderson 116* (MO, SABG). *Use(s):* none documented.

Cynanchum L.

Cynanchum auriculatum Royle ex Wight
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Kashmir, Nepal, Pakistan]. *Specimen: Jan Salick, Robert Moseley & Heidi H. Schmidt 9644* (MO, SABG). *Use(s):* none documented.

Cynanchum boudieri H. Lév. & Vaniot
Distribution: China. Anhui, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Jiangsu, Jiangxi, Shaanxi, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang [Japan (Ryukyu Islands)]. *Specimen: Danica Anderson, Jan Salick, Bee Gunn, Yin Xuezhen & Senadoji 327* (MO, SABG). *Use(s):* none documented.

Cynanchum forrestii Schltr.
Distribution: China. Gansu, Guizhou, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Wu Sugong et al. WB-073* (KUN). *Use(s):* medicinal.

Dregea E. Mey.

Dregea yunnanensis (Tsiang) Tsiang & P. T. Li
Distribution: China. Gansu, Sichuan, Xizang (Tibet), Yunnan. *Specimen: George Yatskievych 04-148* (KUN, MO). *Use(s):* none documented.

Gymnema R. Br.

Gymnema longiretinaculatum Tsiang
Distribution: China. Guizhou, Sichuan, Yunnan. *Specimen: Danica Anderson 94* (MO, SABG). *Use(s):* none documented.

Hoya R. Br.

Hoya lyi H. Lév.
Distribution: China. Guangxi, Guizhou, Sichuan, Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Aquifoliaceae

Ilex L.

Ilex bioritsensis Hayata
Distribution: China. Guizhou, SW Hebei, Hunan, Sichuan, C Taiwan, N Yunnan. *Specimen: Fang Zhendong 2003-43* (SABG). *Use(s):* none documented.

Ilex dipyrena Wall.
Distribution: China. SW Hubei, SW Sichuan, SE Xizang (Tibet), Yunnan [Bhutan, N India, N Myanmar (Burma), Nepal]. *Specimen: Meili Team 24826* (PYU, SABG). *Use(s):* none documented.

Ilex franchetiana Loes.
Distribution: China. Guizhou, Hubei, Sichuan, SE Xizang (Tibet), NW Yunnan [N Myanmar (Burma)]. *Specimen: Meili Team 27281* (PYU, SABG). *Use(s):* none documented.

Ilex yunnanensis Franch.
Distribution: China. S Gansu, Guangxi, Guizhou, Hubei, S Shaanxi, Sichuan, Taiwan, SE Xizang (Tibet), Yunnan [N Myanmar (Burma)]. *Specimen: Meili Team 27407* (PYU, SABG). *Use(s):* none documented.

Araceae

Arisaema Mart.

Arisaema auriculatum Buchet
Distribution: China. NW Hunan, Sichuan, Yunnan. *Specimen: Meili Team 24917* (PYU, SABG). *Use(s):* none documented.

Arisaema elephas Buchet
Distribution: China. Gansu, Guizhou, Sichuan, Xizang (Tibet), Yunnan [Bhutan, Myanmar (Burma)]. *Specimen: Jan Salick & Sonam Dorje 9595* (MO, SABG). *Use(s):* none documented.

Arisaema erubescens (Wall.) Schott
Distribution: China (widely distributed except in

Heilonjiang, Jilin, Liaoning, Nei Mongol). Yunnan [N & NE India, Myanmar (Burma), Nepal, Sikkim, N Thailand]. *Specimen: Meili Team 25027* (PYU, SABG). *Use(s):* medicinal.

Arisaema flavum (Forssk.) Schott

Distribution: China. Sichuan, Yunnan, Xizang (Tibet) [Afghanistan, Bhutan, NW & SE India, Kashmir, Nepal, Oman, Saudi Arabia, Sikkim; Ethiopia]. *Specimen: Meili Team 25940* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Arisaema handelii Stapf ex Hand.-Mazz.

Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 24954* (PYU, SABG). *Use(s):* poisonous, forage and/or fodder.

Arisaema heterophyllum Blume

Distribution: China. Throughout except Xizang (Tibet) [Japan, Korea]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Arisaema lobatum Engl.

Distribution: China. Anhui, Gansu, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Shaanxi, Sichuan, Yunnan, Zhejiang. *Specimen: Meili Team 27279* (PYU, SABG). *Use(s):* medicinal.

Arisaema tortuosum (Wall.) Schott

Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Meili Team 28334* (PYU, SABG). *Use(s):* medicinal.

Arisaema handelii. Photograph by Fang Zhendong.

Araliaceae

Aralia L.

Aralia apioides Hand.-Mazz.

Distribution: China. C Sichuan, NW Yunnan. *Specimen: Jun Wen 1446* (KUN). *Use(s):* medicinal.

Aralia chinensis L.

Distribution: China. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Jiangxi, Yunnan. *Specimen: Meili Team 25714* (PYU, SABG). *Use(s):* food, medicinal.

Aralia gintungensis C. Y. Wu ex K. M. Feng

Distribution: China. C & W Yunnan [Vietnam]. *Specimen: George Yatskievych 04-042* (KUN, MO). *Use(s):* food.

Aralia stipulata Franch.

Distribution: China. Yunnan. *Specimen: Kurt Hoffmeister, Deng Zhiwei & Anthony Amend 23* (MO, SABG). *Use(s):* none documented.

Aralia yunnanensis Franch.

Distribution: China. SW Sichuan, C & NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Eleutherococcus Maxim.

Eleutherococcus cissifolius (Griff. ex C. B. Clarke) Nakai

Distribution: China. Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Meili Team 25087* (PYU, SABG). *Use(s):* medicinal.

Eleutherococcus giraldii (Harms) Nakai

Distribution: China. Gansu, Henan, Hubei, Ningxia, Qinghai, Sichuan, Shaanxi, Yunnan. *Specimen: Kurt Hoffmeister Deng Zhiwei & Anthony Amend 26* (MO, SABG). *Use(s):* none documented.

Eleutherococcus lasiogyne (Harms) S. Y. Hu

Distribution: China. Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 24801* (PYU, SABG). *Use(s):* medicinal, dye.

Eleutherococcus leucorrhizus Oliv.

Distribution: China. Anhui, Gansu, Guangdong, Guizhou, Henan, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Yunnan, Zhejiang. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Eleutherococcus trifoliatus (L.) S. Y. Hu
Distribution: China. S Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hunan, Hubei, S Jiangsu, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [India, Japan, the Philippines, Thailand, Vietnam]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Gamblea C. B. Clarke

Gamblea ciliata C. B. Clarke
Distribution: China. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, S Shaanxi, Sichuan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Myanmar (Burma), Nepal, N Vietnam]. *Specimen: Meili Team 24936* (PYU, SABG). *Use(s):* medicinal, construction.

Hedera L.

Hedera nepalensis K. Koch
Distribution: China. Anhui, Fujian, S Gansu, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, S Shaanxi, Sichuan, S Xizang (Tibet), Yunnan, Zhejiang [Laos, Vietnam]. *Specimen: Meili Team 24817* (PYU, SABG). *Use(s):* medicinal, ornamental.

Kalopanax Miq.

Kalopanax septemlobus (Thunb.) Koidz.
Distribution: China. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Shandong, Shanxi, Shaanxi, Sichuan, Yunnan, Zhejiang [Japan, Korea, Russia]. *Specimen: Meili Team 27358* (PYU, SABG). *Use(s):* medicinal, ornamental, construction.

Metapanax J. Wen & Frodin

Metapanax delavayi (Franch.) J. Wen & Frodin
Distribution: China. Guizhou, Sichuan, Yunnan [N Vietnam]. *Specimen: Meili Team 27422* (PYU, SABG). *Use(s):* medicinal.

Panax L.

Panax japonicus (Nees) C. A. Mey.
Distribution: China. S Anhui, N Fujian, Gansu, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangxi, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, N India, Japan, Korea, Myanmar (Burma), Nepal, NE Thailand, Vietnam]. *Specimen: Jan Salick et al. 9565* (MO, SABG). *Use(s):* medicinal.

Panax pseudoginseng Wall.
Distribution: China. S Xizang (Tibet), Yunnan [Nepal]. *Specimen: Meili Team 25040* (PYU, SABG). *Use(s):* medicinal.

Pentapanax Seem.

Pentapanax fragrans (D. Don) Ha
Distribution: China. SW Sichuan, S Xizang (Tibet), Yunnan [Bangladesh, Bhutan, India, Myanmar (Burma), Nepal, Sri Lanka, N Thailand, N Vietnam]. *Specimen: Meili Team 25057* (PYU, SABG). *Use(s):* medicinal.

Pentapanax henryi Harms
Distribution: China. Anhui, Guangxi, Hubei, Jiangxi, Sichuan, Yunnan, Zhejiang. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Pentapanax parasiticus (D. Don) Seem.
Distribution: China. Sichuan, C & NW Yunnan [Bhutan, India, Nepal, Thailand]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Schefflera J. R. Forst. & G. Forst.

Schefflera delavayi (Franch.) Harms
Distribution: China. Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Yunnan [Vietnam]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal

Schefflera hoi (Dunn) R. Vig.
Distribution: China. SW Sichuan, SE Xizang (Tibet), Yunnan [Vietnam]. *Specimen: Meili Team 27314* (PYU, SABG). *Use(s):* medicinal.

Aristolochiaceae

Aristolochia L.

Aristolochia moupinensis Franch.
Distribution: China. Fujian, Guizhou, Hunan, Jiangxi, Sichuan, Yunnan, Zhejiang. *Specimen: Meili Team 27414* (PYU, SABG). *Use(s):* medicinal.

Asclepiadaceae—see Apocynaceae

Asparagaceae

Asparagus L.

Asparagus filicinus Buch.-Ham. ex D. Don
Distribution: China. Gansu, Guizhou, Henan, Hubei, Hunan, Shaanxi, Shanxi, Sichuan, Yunnan, Zhejiang [Bhutan, India, Myanmar (Burma), Thailand]. *Specimen: Meili Team 25271* (PYU, SABG). *Use(s):* medicinal.

Asparagus myriacanthus F. T. Wang & S. C. Chen
Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25808* (PYU, SABG). *Use(s):* medicinal.

Maianthemum F. C. Wigg.

Maianthemum atropurpureum (Franch.) LaFrankie
Distribution: China. S Sichuan, N Yunnan. *Specimen: Bee Gunn 358* (MO, SABG). *Use(s):* none documented.

Maianthemum henryi (Baker) LaFrankie
Distribution: China. Gansu, Henan, Hubei, Hunan, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan [N Myanmar (Burma), Vietnam]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Maianthemum purpureum (Wall.) LaFrankie
Distribution: China. E & S Xizang (Tibet), NW Yunnan [Bhutan, NE India, Nepal, Sikkim]. *Specimen: Meili Team 25080* (PYU, SABG). *Use(s):* food, medicinal, forage and/or fodder.

Ophiopogon Ker Gawl.

Ophiopogon bodinieri H. Lév.
Distribution: China. Gansu, Guizhou, Henan, Hubei, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan. *Specimen: Fang Zhendong 1822* (SABG). *Use(s):* medicinal, forage and/or fodder.

Ophiopogon intermedius D. Don
Distribution: China. Anhui, Guangdong, Guangxi, Guizhou, Hainan, Henan, Hubei, Hunan, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Bangladesh, Bhutan, India, Myanmar (Burma), Nepal, Sikkim, Sri Lanka, Thailand, Vietnam]. *Specimen: Fang Zhendong 1564* (SABG). *Use(s):* medicinal.

Polygonatum Mill.

Polygonatum cirrhifolium (Wall.) Royle
Distribution: China. Gansu, Guangxi, Ningxia, Qinghai, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Meili Team 25392* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Polygonatum prattii Baker
Distribution: China. W Sichuan, NW Yunnan. *Specimen: Jessica Woo, Ruth Sherman & Jan Salick 629* (MO, SABG). *Use(s):* medicinal.

Polygonatum verticillatum (L.) All.
Distribution: China. Gansu, Nei Mongol, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, Nepal, Pakistan, Russia, Sikkim; SW Asia, Europe]. *Specimen: Meili Team 25817* (PYU, SABG). *Use(s):* medicinal.

Asteraceae

Ainsliaea DC.

Ainsliaea fulvipes Jeffrey & W. W. Sm.
Distribution: China. Yunnan. *Specimen: Meili Team 25429* (PYU, SABG). *Use(s):* medicinal.

Ainsliaea latifolia (D. Don) Sch. Bip.
Distribution: China. Guangxi, Guizhou, Hainan, Sichuan, Xizang (Tibet), Yunnan [Bhutan, Indonesia, Myanmar (Burma), Nepal, Thailand, Vietnam]. *Specimen: Meili Team 25032* (PYU, SABG). *Use(s):* medicinal.

Ainsliaea yunnanensis Franch.
Distribution: China. Guizhou, Sichuan, Yunnan. *Specimen: Jessica Woo, Ruth Sherman & Jan Salick 587* (MO, SABG). *Use(s):* none documented.

Ainsliaea sp.
Distribution: China. NW Yunnan. *Specimen: Meili Team 26650* (PYU, SABG). *Use(s):* none documented.

Ajania Poljakov

Ajania khartensis (Dunn) Shih
Distribution: China. Gansu, Nei Mongol, Ningxia, Qinghai, Sichuan, Xizang (Tibet), Yunnan [N India]. *Specimen: Meili Team 27522* (PYU, SABG). *Use(s):* medicinal, fertilizer.

Anaphalis DC.

Anaphalis aureopunctata Lingelsh. & Borza
Distribution: China. S Gansu, N Guangdong, N Guangxi, Guizhou, W Henan, W Hubei, SW & W Hunan, NW Jiangxi, E Qinghai, S Shaanxi, S Shanxi, Sichuan, Yunnan. *Specimen: Jessica Woo, Ruth Sherman & Jan Salick 644* (MO, SABG).

Use(s): food, medicinal, forage and/or fodder.

Anaphalis bulleyana (Jeffrey) C. C. Chang
Distribution: China. Guizhou, W Sichuan, N & NW Yunnan. *Specimen: Meili Team 27904* (PYU, SABG). *Use(s):* medicinal.

Anaphalis chungtienensis F. H. Chen
Distribution: China. NW Yunnan. *Specimen: Bee Gunn 107* (MO, SABG). *Use(s):* none documented.

Anaphalis flavescens Hand.-Mazz.
Distribution: China. Gansu, Qinghai, Shaanxi, W Sichuan, E & S Xizang (Tibet), Yunnan. *Specimen: MJW 71* (MO). Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Anaphalis lactea Maxim.
Distribution: China. S Gansu, E Qinghai, NW Sichuan, Yunnan. *Specimen: Jan Salick 9549* (MO, SABG). *Use(s):* none documented.

Anaphalis likiangensis (Franch.) Y. Ling
Distribution: China. NW Yunnan. *Specimen: Meili Team 26292* (PYU, SABG). *Use(s):* none documented.

Anaphalis margaritacea (L.) Benth. & Hook. f.
Distribution: China. E, W & S Gansu, W Guangxi, Guizhou, E & W Hubei, S Hunan, E Qinghai, S Shanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Japan, Korea, Myanmar (Burma), Nepal, Russia (Far East); North America, widely introduced in Europe]. *Specimen: Meili Team 28146* (PYU, SABG). *Use(s):* medicinal.

Anaphalis nepalensis Spreng.
Distribution: China. Gansu, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal]. *Specimen: Meili Team 25659* (PYU, SABG). *Use(s):* medicinal.

Anaphalis pannosa Hand.-Mazz.
Distribution: China. NE, NW & W Yunnan. *Specimen: Bee Gunn 169* (MO, SABG). *Use(s):* none documented.

Anaphalis rhododactyla W. W. Sm.
Distribution: China. SW Sichuan, E Xizang (Tibet), N Yunnan. *Specimen: Meili Team 25868* (PYU, SABG). *Use(s):* medicinal.

Anaphalis surculosa (Hand.-Mazz.) Hand.-Mazz.
Distribution: China. Sichuan, Yunnan. *Specimen: Meilishi Team 305* (PYU, SABG). *Use(s):* medicinal.

Anaphalis tibetica Kitam.
Distribution: China. S Xizang (Tibet), Yunnan. *Specimen: Meili Team 26172* (PYU, SABG). *Use(s):* none documented.

Anaphalis virens C. C. Chang
Distribution: China. SW Sichuan, NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Anaphalis viridis Cummins
Distribution: China. SW & W Sichuan, Xizang (Tibet), NW Yunnan. *Specimen: Meilishi Team 168* (PYU, SABG). *Use(s):* medicinal.

Anaphalis xylorhiza Sch. Bip. ex Hook. f.
Distribution: China. S Xizang (Tibet), Yunnan [Bhutan, Nepal]. *Specimen: Meili Team 25903* (PYU, SABG). *Use(s):* none documented.

Anaphalis yunnanensis (Franch.) Diels
Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Meili Team 25588* (PYU, SABG). *Use(s):* none documented.

Arctium L.

Arctium lappa L.
Distribution: China. Throughout [naturalized in temperate regions worldwide]. *Specimen: Yang Jinsheng 84-1092* (YIM). *Use(s):* medicinal, forage and/or fodder.

Artemisia L.

Artemisia austroyunnanensis Jeffrey ex Diels
Distribution: China. S & SW Yunnan [N India, N Myanmar (Burma), N Thailand, N Vietnam]. *Specimen: Meili Team 28140* (PYU, SABG). *Use(s):* none documented.

Artemisia capillaris Thunb.
Distribution: China. Anhui, Fujian, Guangdong, Guangxi, Hebei, E Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, E & S Shaanxi, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang [Cambodia, Indonesia, Japan, Korea, Malaysia, the Philippines, E Russia, Vietnam]. *Specimen: Meili Team 26737* (PYU, SABG). *Use(s):* medicinal.

Artemisia dubia Wall. ex Besser
Distribution: China. C & S Gansu, NW Guangxi, Guizhou, Hebei, S Henan, W Hubei,

Nei Mongol, Ningxia, Qinghai, Shaanxi, W Shangdong, Shanxi, Sichuan, E Xizang (Tibet), Yunnan [Bhutan, India, Japan, Nepal, Thailand]. *Specimen: Meili Team 27349* (PYU, SABG). *Use(s):* medicinal, fertilizer.

Artemisia gmelinii Weber ex Stechm.

Distribution: China. Gansu, Hebei, Jiangsu, Liaoning, W Nei Mongol, Ningxia, Qinghai, Shaanxi, W Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Kazakhstan, Korea, Kyrgyzstan, Mongolia, Russia, Tajikistan, Uzbekistan; E Europe]. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn, Yin Xuezhen & Senadorji 337* (MO, SABG). *Use(s):* medicinal, religious, forage and/or fodder, fertilizer.

Artemisia mattfeldii Pamp.

Distribution: China. SW Gansu, S Qinghai, W Sichuan, E Xizang (Tibet), Yunnan. *Specimen: Meili Team 24800* (PYU, SABG). *Use(s):* medicinal, religious, forage and/or fodder, fertilizer.

Artemisia sieversiana Ehrh.

Distribution: China. Gansu, N Guizhou, Hebei, Heilongjiang, Hubei, Jilin, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shanxi, E & W Sichuan, Xinjiang, Xizang (Tibet), W Yunnan [Afghanistan, India, Japan, Kazakhstan, Korea, Kyrgyzstan, Mongolia, Pakistan, Russia, Tajikistan, Turkmenistan, Uzbekistan; E Europe]. *Specimen: Meili Team 26031* (PYU, SABG). *Use(s):* medicinal, fertilizer.

Artemisia speciosa (Pamp.) Ling & Y. R. Ling.

Distribution: China. W Sichuan, NW Yunnan, E Xizang (Tibet). *Specimen: Handel-Mazzetti 8070* (FI, W). *Use(s):* none documented.

Artemisia tangutica Pamp.

Distribution: China. C & SW Gansu, Qinghai, W Sichuan, E Xizang (Tibet), Yunnan. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn, Yin Xuezhen & Senadorji 275* (MO, SABG). *Use(s):* forage and/or fodder, fertilizer.

Artemisia vestita Wall. ex Besser

Distribution: China. Gansu, NW Guangxi, Guizhou, N Hubei, Liaoning, Qinghai, W Sichuan, Xinjiang, Xizang (Tibet), Yunnan [N India, Nepal, N Pakistan]. *Specimen: Meili Team 28139* (PYU, SABG). *Use(s):* medicinal.

Artemisia viscidissima Ling & Y. R. Ling

Distribution: China. E Xizang (Tibet), Yunnan. *Specimen: Meili Team 25277* (PYU, SABG). *Use(s):* none documented.

Artemisia yunnanensis Jeffrey ex Diels

Distribution: China. S Qinghai, W Sichuan, Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25933* (PYU, SABG). *Use(s):* none documented.

Aster L.

Aster albescens (DC.) Wall. ex Hand.-Mazz.

Distribution: China. Gansu, Guizhou, Hubei, S Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, W Himalayan region, N India, Myanmar (Burma), Nepal]. *Specimen: Meili Team 25805* (PYU, SABG). *Use(s):* medicinal.

Aster brevis Hand.-Mazz.

Distribution: NW Yunnan. *Specimen: Heidi Schmidt et al. 4032* (MO, SABG). *Use(s):* none documented.

Aster diplostephioides (DC.) Benth. ex C. B. Clarke

Distribution: China. W Gansu, E Qinghai, SW & W Sichuan, S Xizang (Tibet), NW Yunnan [Bhutan, India, Nepal, N Pakistan]. *Specimen: Fang Zhendong 1637* (SABG). *Use(s):* medicinal.

Aster flaccidus Bunge

Distribution: China. S Gansu, N Hebei, E Qinghai, S Shaanxi, Shanxi, W Sichuan, Xinjiang, Xizang (Tibet), NW Yunnan [Bhutan, India, Kashmir, Mongolia, Nepal, Pakistan, Russia (E Siberia)]. *Specimen: Yang Jinsheng 8757* (YIM). *Use(s):* medicinal.

Aster fuscescens Burret & Franch.

Distribution: China. Sichuan, Xizang (Tibet), Yunnan [NE Myanmar (Burma)]. *Specimen: Meili Team 25523* (PYU, SABG). *Use(s):* none documented.

Aster platylepis Y. L. Chen

Distribution: China. S Xizang (Tibet), Yunnan [India]. *Specimen: Fang Zhendong s.n.* (SABG). *Use(s):* none documented.

Aster salwinensis Onno

Distribution: China. SW Sichuan, E Xizang (Tibet), NW Yunnan [NE Myanmar (Burma)]. *Specimen: Meili Team 26261* (PYU, SABG). *Use(s):* medicinal.

Aster souliei Franch.

Distribution: China. S Gansu, NW to SW Sichuan, E & S Xizang (Tibet), NW Yunnan [Bhutan, N Myanmar (Burma)]. *Specimen: Meili Team 26296* (PYU, SABG). *Use(s):* medicinal.

Aster tsarungensis (Grierson) Ling

Distribution: China. W Sichuan, NW Yunnan, SE Xizang (Tibet). *Specimen: Meili Team 25587* (PYU, SABG). *Use(s):* medicinal.

Bidens L.

Bidens bipinnata L.

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Hebei, Jilin, Jiangsu, Jiangxi, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Yunnan, Zhejiang [Korea; North America; South America; Europe; the Pacific Islands]. *Specimen: Meili Team 26630* (PYU, SABG). *Use(s):* medicinal.

Carduus L.

Carduus acanthoides L.

Distribution: China. Yunnan [Russia; Europe; NE Asia]. *Specimen: Meili Team 24794* (PYU, SABG). *Use(s):* medicinal.

Carpesium L.

Carpesium cernuum L.

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Japan, Korea, Russia; Europe]. *Specimen: Danica Anderson 83* (MO, SABG). *Use(s):* medicinal.

Carpesium lipskyi C. Winkl.

Distribution: China. Gansu, Qinghai, Shanxi, Sichuan, Yunnan. *Specimen: Yang Jinsheng 8678* (YIM). *Use(s):* medicinal.

Carpesium triste Maxim.

Distribution: China. Gansu, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Jilin, Liaoning, Shaanxi, Taiwan, Xinjiang, Yunnan, Zhejiang [Japan, Korea, Russia]. *Specimen: Meili Team 26071* (PYU, SABG). *Use(s):* none documented.

Chaetoseris C. Shih

Chaetoseris cyanea (D. Don) C. Shih

Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan [Nepal, Sikkim]. *Specimen: Meili Team 26689* (PYU, SABG). *Use(s):* none documented.

Cirsium Mill.

Cirsium eriophoroides (Hook. f.) Petr.

Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25709* (PYU, SABG). *Use(s):* medicinal.

Cremanthodium Benth.

Cremanthodium angustifolium W. W. Sm.

Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Jan Salick & Sonam Dorje 9613* (MO, SABG). *Use(s):* religious.

Cremanthodium decaisnei C. B. Clarke

Distribution: China. SW Gansu, SW Qinghai, SW Sichuan, Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 26345* (PYU, SABG). *Use(s):* medicinal.

Cremanthodium forrestii Jeffrey

Distribution: China. NW Yunnan. *Specimen: Meili Team 27945* (PYU, SABG). *Use(s):* none documented.

Cremanthodium helianthus (Franch.) W. W. Sm.

Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Fang Zhendong 1650* (SABG). *Use(s):* medicinal.

Cremanthodium humile Maxim.

Distribution: China. Gansu, Qinghai, NW to SW Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 26331* (PYU, SABG). *Use(s):* medicinal.

Cremanthodium puberulum S. W. Liu

Distribution: China. SW Qinghai, NE Xizang (Tibet), Yunnan. *Specimen: Fang Zhendong 1723* (SABG). *Use(s):* none documented.

Cremanthodium rhodocephalum Diels

Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Fang Zhendong 1629* (SABG). *Use(s):* medicinal.

Diplazoptilon Ling

Diplazoptilon picridifolium (Hand.-Mazz.) Ling

Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 26237* (PYU, SABG). *Use(s):* medicinal.

Doronicum L.

Doronicum altaicum Pall.

Distribution: China. Nei Mongol, N Xinjiang, Yunnan [Russia (Siberia)]. *Specimen: Meili Team 26339* (PYU, SABG). *Use(s):* none documented.

Erigeron L.

Erigeron breviscapus (Vaniot) Hand.-Mazz.

Distribution: China. Guangxi, Guizhou, Hunan, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Jan Salick et al. 9320* (MO, SABG). *Use(s):* medicinal.

Erigeron himalajensis Vierh.

Distribution: China. W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 26769* (PYU, SABG). *Use(s):* none documented.

Erigeron multifolius Hand.-Mazz.

Distribution: China. NW Yunnan. *Specimen: Fang Zhendong 1657* (SABG). *Use(s):* medicinal.

Eupatorium L.

Eupatorium heterophyllum DC.

Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan [Nepal]. *Specimen: Meili Team 26629* (PYU, SABG). *Use(s):* medicinal.

Galinsoga Ruiz & Pav.

Galinsoga parviflora Cav.

Distribution: China. Widely naturalized [worldwide]. *Specimen: Meili Team 26375* (PYU, SABG). *Use(s):* medicinal.

Gerbera L.

Gerbera nivea (DC) Sch. Bip.

Distribution: China. W Sichuan, S Xizang (Tibet), NW Yunnan [India, Nepal]. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn & Peiji 209* (MO, SABG). *Use(s):* medicinal, forage and/or fodder.

Gerbera raphanifolia Franch.

Distribution: China. NW Yunnan. *Specimen: Danica Anderson 388* (MO, SABG). *Use(s):* medicinal.

Gnaphalium L.

Gnaphalium affine D. Don

Distribution: China. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [India, Indonesia, Japan, Korea, Nepal, Myanmar (Burma), the Philippines, Vietnam; Australia]. *Specimen: Meili Team 25389* (PYU, SABG). *Use(s):* medicinal.

Helianthus L.

Helianthus annuus L.

Distribution: cultivated. Report based on Fang Zhendong, pers. obs. *Use(s):* food, oil.

Heteropappus Less.

Heteropappus altaicus (Willd.) Novopokr.

Distribution: China. Gansu, Hebei, Heilongjiang, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shanxi, W Sichuan, Xinjiang, NW Yunnan [India, Mongolia, Siberia, Iran]. *Specimen: Fang Zhendong 1066* (SABG). *Use(s):* medicinal.

Heteropappus crenatifolius (Hand.-Mazz.) Grierson

Distribution: China. Gansu, Qinghai, Sichuan, Xizang (Tibet), Yunnan [Nepal]. *Specimen: Danica M. Anderson, Jan Salick, Bee F. Gunn, Yin Xuezhen & Senadorji 336* (MO, SABG). *Use(s):* medicinal, forage and/or fodder.

Hippolytia Polyakov

Hippolytia yunnanensis (Jeffrey) C. Shih

Distribution: China. Yunnan. *Specimen: Yu Hong 90-15* (SABG). *Use(s):* medicinal.

Inula L.

Inula hookeri C. B. Clarke

Distribution: China. SE Xizang (Tibet), NW Yunnan [Bhutan, India, Sikkim]. *Specimen: Meili Team 27866* (PYU, SABG). *Use(s):* none documented.

Ixeridium (A. Gray) Tzvelev

Ixeridium chinense (Thunb.) Tzvelev

Distribution: China. Anhui, Fujian, Guizhou, Hebei, Heilongjiang, Henan, Jiangsu, Jiangxi, Shaanxi, Shanxi, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Japan, Korea, Russia]. *Specimen: Meili Team 26468* (PYU, SABG). *Use(s):* food, medicinal.

Kalimeris Cass.

Kalimeris indica (L.) Sch. Bip.

Distribution: China. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, S Shanxi, Sichuan,

Taiwan, Yunnan, Zhejiang [India, Japan, Korea, Vietnam]. *Specimen: Meili Team 25101* (PYU, SABG). *Use(s):* medicinal.

Lactuca L.

Lactuca sativa L.
Distribution: cultivated [cultivated worldwide in temperate regions]. Report based on Fang Zhendong, pers. obs. *Use(s):* food.

Leibnitzia Cass.

Leibnitzia nepalense (Kunze) Kitamura
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Pakistan]. *Specimen: Meili Team 26751* (PYU, SABG). *Use(s):* none documented.

Leontopodium R. Br. ex Cass.

Leontopodium artemisiifolium (H. Lév.) Beauverd
Distribution: China. Sichuan, N Yunnan. *Specimen: Meili Team 26870* (PYU, SABG). *Use(s):* none documented.

Leontopodium calocephalum (Franch.) Beauverd
Distribution: China. Gansu, Qinghai, Sichuan, Yunnan. *Specimen: Meili Team 26218* (PYU, SABG). *Use(s):* none documented.

Leontopodium dedekensii (Bureau & Franch.) Beauverd
Distribution: China. Gansu, Qinghai, Sichuan, Xizang (Tibet), Yunnan [Myanmar (Burma)]. *Specimen: George Yatskievych 04-130* (KUN, MO). *Use(s):* medicinal.

Leontopodium himalayanum DC.
Distribution: China. Xizang (Tibet), NW Yunnan [India, Kashmir, Myanmar (Burma), Nepal]. *Specimen: Meili Team 26268* (PYU, SABG). *Use(s):* none documented.

Leontopodium muscoides Hand.-Mazz.
Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Jan Salick & Sonam Dorje 9582* (MO, SABG). *Use(s):* handcrafts.

Leontopodium sinense Hemsl.
Distribution: China. Guizhou, W Hubei, Sichuan, SE Xizang (Tibet), Yunnan. *Specimen: Meili Team 26693* (PYU, SABG). *Use(s):* food.

Leontopodium stracheyi (Hook. f.) C. B. Clarke ex Hemsl.
Distribution: China. Qinghai, Sichuan, Xizang (Tibet), NW Yunnan [N India, Nepal]. *Specimen: Fang Zhendong 1710* (SABG). *Use(s):* medicinal, firestarter.

Ligularia Cass.

Ligularia cremanthodioides Hand.-Mazz.
Distribution: China. SE Xizang (Tibet), NW Yunnan [Nepal]. *Specimen: Meili Team 26429* (PYU, SABG). *Use(s):* none documented.

Ligularia latihastata (W. W. Sm.) Hand.-Mazz.
Distribution: China. NW Yunnan. *Use(s):* medicinal.

Ligularia microcephala (Hand.-Mazz.) Hand.-Mazz.
Distribution: China. Yunnan. *Specimen: Meilishi Team 84* (PYU, SABG). *Use(s):* none documented.

Ligularia retusa DC.
Distribution: China. SE Xizang (Tibet), NW Yunnan [Bhutan, NE India, Nepal, Sikkim]. *Specimen: Meili Team 28041* (PYU, SABG). *Use(s):* none documented.

Ligularia stenocephala (Maxim.) Matsum. & Koidz.
Distribution: China. Anhui, Guangdong, Guangxi, Hebei, Henan, Hubei, Jiangsu, Jiangxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang (Tibet), NW Yunnan, Zhejiang [Japan]. *Specimen: Meili Team 26934* (PYU, SABG). *Use(s):* none documented.

Ligularia subspicata (Bureau & Franch.) Hand.-Mazz.
Distribution: China. Sichuan, NW Yunnan. *Specimen: Jessica Woo & Ruth Sherman 538* (MO, SABG). *Use(s):* none documented.

Ligularia tsangchanensis (Franch.) Hand.-Mazz.
Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 26713* (PYU, SABG). *Use(s):* none documented.

Ligularia virgaurea (Maxim.) Mattf. ex Rehder & Kobuski
Distribution: China. Gansu, Qinghai, Sichuan, Xizang (Tibet), Yunnan [Bhutan, Nepal]. *Specimen: Meilishi Team 59* (PYU, SAB). *Use(s):* none documented.

Myriactis Less.

Myriactis delavayi Gagnep.
Distribution: China. Sichuan, Yunnan. *Specimen: Meili Team 26075* (PYU, SABG). *Use(s):* none documented.

Myriactis wallichii Less.

Distribution: China. Gansu, Sichuan, Xizang (Tibet), Yunnan [India, Nepal]. *Specimen: Meili Team 26072* (PYU, SABG). *Use(s):* medicinal.

Myriactis wightii DC.

Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan [India, Sri Lanka]. *Specimen: Danica Anderson 366* (MO, SABG). *Use(s):* medicinal.

Neopallasia Poljakov

Neopallasia pectinata (Pall.) Poljakov

Distribution: China. Gansu, Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Qinghai, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Kazakhstan, Mongolia, Russia]. *Specimen: Meili Team 26035* (PYU, SABG). *Use(s):* none documented.

Parasenecio W. W. Sm. & J. Small

Parasenecio cyclotus (Bureau & Franch.) Y. L. Chen

Distribution: China. W Sichuan, Yunnan. *Specimen: Bee Gunn 211* (MO, SABG). *Use(s):* none documented.

Parasenecio hastiformis Y. L. Chen

Distribution: China. Yunnan. *Specimen: Meilishi Team 40* (PYU, SABG). *Use(s):* none documented.

Parasenecio latipes (Franch.) Y. L. Chen

Distribution: China. SW & W Sichuan, NW Yunnan. *Specimen: Jessica Woo & Ruth Sherman 528* (MO, SABG). *Use(s):* none documented.

Parasenecio palmatisectus (Jeffrey) Y. L. Chen

Distribution: China. SW & W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25736* (PYU, SABG). *Use(s):* none documented.

Parasenecio quinquelobus (Wall. ex DC.) Y. L. Chen

Distribution: China. SW Sichuan, Xizang (Tibet), NW Yunnan [Bhutan, NW India, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Jessica Woo, Ruth Sherman & Jan Salick 681* (MO, SABG). *Use(s):* firewood.

Parasenecio taliensis (Franch.) Y. L. Chen

Distribution: China. Yunnan. *Specimen: Meili Team 25756* (PYU, SABG). *Use(s):* none documented.

Pertya Sch. Bip.

Pertya phylicoides Jeffrey

Distribution: China. Xizang (Tibet), Yunnan. *Specimen: Danica M. Anderson, Jan Salick, Bee F. Gunn, Yin Xuezhen & Peiji 268* (MO, SABG). *Use(s):* handcrafts.

Petasites Mill.

Petasites tricholobus Franch.

Distribution: China. Gansu, Guizhou, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan [India, Nepal, Vietnam]. *Specimen: Meili Team 24861* (PYU, SABG). *Use(s):* medicinal, handcrafts.

Picris L.

Picris hieracioides L.

Distribution: China. Gansu, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Jilin, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Kazakhstan, Russia; SW Asia, Europe, Mediterranean region]. *Specimen: Meili Team 25100* (PYU, SABG). *Use(s):* medicinal.

Prenanthes L.

Prenanthes brunoniana Wall. ex DC.

Distribution: China. Yunnan [Afghanistan, India, Kashmir, Nepal, Pakistan]. *Specimen: Meili Team 26851* (PYU, SABG). *Use(s):* none documented.

Pyrethrum Zinn.

Pyrethrum tatsienense (Bureau & Franch.) Ling ex C. Shih

Distribution: China. Qinghai, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Fang Zhendong 1679* (SABG). *Use(s):* medicinal, religious.

Saussurea DC.

Saussurea amurensis Turcz. ex DC.

Distribution: China. Heilongjiang, Jilin, Liaoning, Nei Mongol, Yunnan [Korea, Russia]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Saussurea brachylepis Hand.-Mazz.

Distribution: China. Sichuan, Yunnan. *Specimen: Jessica Woo, Ruth Sherman & Jan Salick 656* (MO, SABG). *Use(s):* medicinal.

Saussurea costus (Flac.) Lipsch.

Distribution: China. Guangxi, Guizhou, Shaanxi, Sichuan, Yunnan [Kashmir, Pakistan]. *Specimen: Meili Team 25665* (PYU, SABG). *Use(s):* medicinal.

Saussurea fastuosa (Decne.) Sch. Bip.
Distribution: China. S Xizang (Tibet), Yunnan [Bhutan, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 26526* (PYU, SABG). *Use(s):* none documented.

Saussurea fistulosa J. Anthony
Distribution: China. Yunnan. *Specimen: Bee Gunn & Wayne Law 187* (MO, SABG). *Use(s):* none documented.

Saussurea gnaphalodes (Royle) Sch. Bip.
Distribution: China. Gansu, Qinghai, Sichuan, S & W Xinjiang, Xizang (Tibet), Yunnan [NW India, Kazakhstan, Kyrgyzstan, Nepal, Pakistan]. *Specimen: Heidi Schmidt, Huang Fan & Lu Zit 4052* (MO, PYU, SABG). *Use(s):* none documented.

Saussurea gossipiphora D. Don
Distribution: China. S Xizang (Tibet), Yunnan [Bhutan, NW India, Nepal, Sikkim]. *Specimen: Meili Team 26616* (PYU, SABG). *Use(s):* medicinal.

Saussurea hieracioides Hook. f.
Distribution: China. Gansu, Hubei, Qinghai, Sichuan, Xizang (Tibet), Yunnan [Bhutan, Nepal, Sikkim]. *Specimen: Meili Team 26566* (PYU, SABG). *Use(s):* medicinal.

Saussurea gossipiphora. Photograph by Fang Zhendong.

Saussurea laniceps Hand.-Mazz.
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Fang Zhendong 237* (SABG). *Use(s):* medicinal.

Saussurea leontodontoides (DC.) Sch. Bip.
Distribution: China. Qinghai, Sichuan, Xizang (Tibet), Yunnan [NW India, Kashmir, Nepal, Sikkim]. *Specimen: Meili Team 26568* (PYU, SABG). *Use(s):* medicinal.

Saussurea leucoma Diels
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25904* (PYU, SABG). *Use(s):* medicinal.

Saussurea medusa Maxim.
Distribution: China. Gansu, Qinghai, Sichuan, Xizang (Tibet), Yunnan [Kashmir, Nepal]. *Specimen: Meili Team 26534* (PYU, SABG). *Use(s):* medicinal.

Saussurea laniceps. Photograph by Fang Zhendong.

Saussurea medusa. Photograph by Fang Zhendong.

Saussurea obvallata (DC.) Edgew.
Distribution: China. Gansu, Qinghai, Sichuan, Xizang (Tibet), Yunnan [Bhutan, NW India, Kashmir, N Myanmar (Burma), Nepal, Pakistan, Sikkim]. *Specimen: Fang Zhendong 263* (SABG). *Use(s):* medicinal.

Saussurea ochrochlaena Hand.-Mazz.
Distribution: China. S Xizang (Tibet), Yunnan. *Specimen: Meili Team 25906* (PYU, SABG). *Use(s):* none documented.

Saussurea pachyneura Franch.
Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan [Bhutan, N Myanmar (Burma), E Nepal, Sikkim]. *Specimen: Meili Team 28104* (PYU, SABG). *Use(s):* medicinal.

Saussurea phaeantha Maxim.
Distribution: China. Gansu, Qinghai, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meilishi Team 62* (PYU, SABG). *Use(s):* none documented.

Saussurea purpurascens Y. L. Chen & S. Yun Liang
Distribution: China. Xizang (Tibet), Yunnan.

Saussurea obvallata. Photograph by Fang Zhendong.

Specimen: Fang Zhendong 1663 (SABG). *Use(s):* none documented.

Saussurea quercifolia W. W. Sm.
Distribution: China. Qinghai, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meilishi Team 63* (PYU, SABG). *Use(s):* none documented.

Saussurea retroserrata Y. L. Chen & S. Yun Liang
Distribution: China. SE Xizang (Tibet), Yunnan. *Specimen: Meili Team 25713* (PYU, SABG). *Use(s):* none documented.

Saussurea romuleifolia Franch
Distribution: China. Sichuan, Yunnan. *Specimen: Wayne Law 67* (MO, SABG). *Use(s):* none documented.

Saussurea salwinensis J. Anthony
Distribution: China. Xizang (Tibet), Yunnan. *Specimen: Bee Gunn & Wayne Law 202* (MO, SABG). *Use(s):* none documented.

Saussurea scabrida Franch.
Distribution: China. W Sichuan, E & SE Xizang (Tibet), Yunnan. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn & Peiji 190* (MO, SABG). *Use(s):* medicinal.

Saussurea semilyrata Bureau & Franch
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26795* (PYU, SABG). *Use(s):* none documented

Saussurea simpsoniana (Fielding & Gardner) Lipsch.
Distribution: China. S Xinjiang, W Xizang (Tibet), Yunnan [Bhutan, NW India, Kashmir, Nepal, Pakistan, Sikkim]. *Specimen: Zhang Canming 89-58* (SABG). *Use(s):* none documented.

Saussurea stella Maxim.
Distribution: China. Gansu, Qinghai, W Sichuan, Xizang (Tibet), NW Yunnan [Bhutan, Sikkim]. *Specimen: Yu Dejun 13939* (KUN). *Use(s):* medicinal.

Saussurea tatsienensis Franch.
Distribution: China. Sichuan, Yunnan. *Specimen: Meilishi Team 306* (PYU, SABG). *Use(s):* none documented

Saussurea tridactyla Sch. Bip. ex Hook. f
Distribution: China. Xizang (Tibet), Yunnan [Bhutan, Nepal, Sikkim]. *Specimen: Meili Team 26725* (PYU, SABG). *Use(s):* medicinal

Saussurea velutina W. W. Sm

Distribution: China. SW Sichuan, SE Xizang (Tibet), Yunnan. *Specimen: Meili Team 26525* (PYU, SABG). *Use(s):* medicinal.

Saussurea wernerioides Sch. Bip. ex Hook. f.
Distribution: China. Sichuan, S Xizang (Tibet), Yunnan [Bhutan, Sikkim]. *Specimen: Meili Team 26383* (PYU, SABG). *Use(s):* none documented.

Saussurea tridactyla. Photograph by Fang Zhendong.

Saussurea velutina. Photograph by Fang Zhendong.

Senecio L.

Senecio nodiflorus C. C. Chang
Distribution: China. Xizang (Tibet), Yunnan. *Specimen: Meili Team 26142* (PYU, SABG). *Use(s):* medicinal.

Senecio scandens Buch.-Ham. ex D. Don
Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Jiangsu, Jiangxi, Qinghai, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Indochina, Japan, Myanmar (Burma), Nepal, the Philippines, Sri Lanka, Thailand]. *Specimen: Meili Team 26847* (PYU, SABG). *Use(s):* medicinal.

Sigesbeckia L.

Sigesbeckia orientalis L.
Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [India, Japan, Laos, Malaysia, Nepal, Russia, Thailand, Vietnam; Oceania, Africa, Australia, Tropic America]. *Specimen: Danica Anderson 72* (MO, SABG). *Use(s):* none documented.

Sinosenecio B. Nord.

Sinosenecio euosmus (Hand.-Mazz.) B. Nord.
Distribution: China. Gansu, Hubei, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Myanmar (Burma)]. *Specimen: Meili Team 26152* (PYU, SABG). *Use(s):* none documented.

Sinosenecio oldhamianus (Maxim.) B. Nord.
Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guizhou, Hunan, Jiangsu, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan, Zhejiang. *Specimen: Wu Sugong et al. WB-229* (KUN). *Use(s):* none documented.

Sonchus L.

Sonchus oleraceus L.
Distribution: China. Throughout [temperate regions worldwide]. *Specimen: Meili Team 26480* (PYU, SABG). *Use(s):* food, medicinal.

Soroseris Stebbins

Soroseris erysimoides (Hand.-Mazz.) C. Shih

Distribution: China. Gansu, Qinghai, Shaanxi, Sichuan, Yunnan [Nepal, Sikkim]. *Specimen: Bee Gunn & Wayne Law 133* (MO, SABG). *Use(s):* none documented.

Soroseris gillii (S. Moore) Stebbins

Distribution: China. Qinghai, Sichuan, Yunnan. *Specimen: Meili Team 26405* (PYU, SABG). *Use(s):* medicinal.

Soroseris glomerata (Decne.) Stebbins

Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26555* (PYU, SABG). *Use(s):* medicinal.

Stebbinsia Lipsch.

Stebbinsia umbrella (Franch.) Lipsch. (syn. *Soroseris umbrella* (Franch.) Lipsch.)

Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26858* (PYU, SABG). *Use(s):* medicinal.

Syncalathium Lipsch.

Syncalathium souliei (Franch.) Y. Ling

Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26190* (PYU, SABG). *Use(s):* none documented.

Synotis (C. B. Clarke) C. Jeffrey & Y. L. Chen

Synotis setchuanensis (Franch.) C. Jeffrey & Y. L. Chen

Distribution: China. W Sichuan, Yunnan. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn, Yin Xuezhen & Senadorji 313* (MO, SABG). *Use(s):* forage and/or fodder.

Synotis solidaginea (Hand.-Mazz.) C. Jeffrey & Y. L. Chen

Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Jessica Woo, Ruth Sherman & Jan Salick 626* (MO, SABG). *Use(s):* handcrafts.

Tanacetum L.—see *Pyrethrum*

Taraxacum F. H. Wigg.

Taraxacum eriopodum (D. Don) DC.

Distribution: China. Gansu, NE Qinghai, Shaanxi, Shanxi, SW Sichuan, Xizang (Tibet), NW Yunnan [Bhutan, India, Kashmir, Mongolia, Nepal, Pakistan, Sikkim]. *Specimen: Meili Team 24938* (PYU, SABG). *Use(s):* none documented.

Taraxacum indicum Hand.-Mazz.

Distribution: China. SW Sichuan, C & NW Yunnan [India, Kashmir, Pakistan, Vietnam]. *Specimen: Jan Salick 9740* (MO, SABG). *Use(s):* medicinal.

Taraxacum mongolicum Hand.-Mazz.

Distribution: China. Anhui, Chongqing, Fujian, Gansu, N Guangdong, N Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, NE Jiangxi, Jilin, Liaoning, Nei Mongol, Qinghai, Shandong, Shaanxi, N Shanxi, Sichuan, Taiwan, Yunnan, Zhejiang [Japan, Korea, Mongolia, Russia]. *Specimen: Meili Team 26472* (PYU, SABG). *Use(s):* none documented.

Taraxacum sikkimense Hand.-Mazz.

Distribution: China. Qinghai, W Sichuan, S Xizang (Tibet), NW Yunnan [India, Nepal, Pakistan, Sikkim]. *Specimen: Jessica Woo & Ruth Sherman 437* (MO, SABG). *Use(s):* medicinal.

Taraxacum tibetanum Hand.-Mazz.

Distribution: China. Qinghai, W Sichuan, Xizang (Tibet), NW Yunnan [NE India, Nepal]. *Specimen: Meili Team 26342* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Xanthium L.

Xanthium strumarium L.

Distribution: China. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Henan, Heilongjiang, Hubei, Hunan, Jilin, Jiangsu, Jiangxi, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang [India, Iran, Japan, Korea, Mongolia, Russia; North America]. *Specimen: Zhu Weiming 057* (PYU). *Use(s):* medicinal, oil.

Youngia Cass.

Youngia japonica (L.) DC.

Distribution: China. Anhui, Beijing, Fujian, Henan, Hubei, Hunan, Guangdong, Guangxi, Jiangxi, Sichuan, Xizang (Tibet), Yunnan, Zhejiang [India, Japan, Korea, Malaysia, the Philippines]. *Specimen: Meili Team 25177* (PYU, SABG). *Use(s):* forage and/or fodder.

Youngia paleacea (Diels) Babc. & Stebbins

Distribution: China. Sichuan, Xizang (Tibet),

Yunnan. *Specimen: Meili Team 26817A* (PYU, SABG). *Use(s):* forage and/or fodder.

Youngia racemifera (Hook. f.) Babc. & Stebbins
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, Nepal, Sikkim]. *Specimen: Meili Team 26817B* (PYU, SABG). *Use(s):* forage and/or fodder.

Balanophoraceae

Balanophora J. R. Forst. & G. Forst.

Balanophora involucrata Hook. f.
Distribution: China. Guizhou, Henan, W Hubei, Hunan, S Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Meili Team 27879* (PYU, SABG). *Use(s):* medicinal.

Balsaminaceae

Impatiens L.

Impatiens delavayi Franch.
Distribution: China. SW Sichuan, SE Xizang (Tibet), Yunnan. *Specimen: G. Forrest 117* (E, type not seen). *Use(s):* medicinal, ornamental.

Impatiens desmantha Hook. f.
Distribution: China. SW Sichuan, Xizang (Tibet), NW Yunnan. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn & Yin Xuezhen 353* (MO, SABG). *Use(s):* medicinal, forage and/or fodder.

Impatiens holocentra Hand.-Mazz.
Distribution: China. NW Yunnan [NE Myanmar (Burma)]. *Use(s):* none documented.

Impatiens lecomtei Hook. f.
Distribution: China. NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Impatiens siculifer Hook. f.
Distribution: China. Fujian, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Impatiens xanthocephala W. W. Sm.
Distribution: China. SW Sichuan, NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Berberidaceae

Berberis L.

Berberis aggregata C. K. Schneid.
Distribution: China. Gansu, Hubei, Qinghai, Shanxi, Sichuan, Yunnan. *Specimen: Meili Team 27236* (PYU, SABG). *Use(s):* medicinal.

Berberis approximata Sprague
Distribution: China. Qinghai, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Ruizi La Team 121* (MO, SABG). *Use(s):* none documented.

Berberis concolor W. W. Sm.
Distribution: China. Yunnan. *Specimen: Wu Sugong WB-042* (KUN). *Use(s):* none documented.

Berberis dasystachya Maxim.
Distribution: China. Gansu, Hebei, Henan, Hubei, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan, Yunnan. *Specimen: Meili Team 27455* (PYU, SABG). *Use(s):* none documented.

Berberis davidii Ahrendt
Distribution: China. NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Berberis delavay C. K. Schneid.
Distribution: China. Sichuan, Yunnan. Specimen: *Danica Anderson & Bee Gunn 384* (MO, SABG). *Use(s):* medicinal.

Berberis dictyophylla Franch.
Distribution: China. Qinghai, Sichuan, Yunnan, Xizang (Tibet). *Specimen: Wayne Law, Yang Yongping, Sonam Dorje & Dingqing Jumi 81* (MO, SABG). *Use(s):* medicinal.

Berberis franchetiana C. K. Schneid.
Distribution: China. Sichuan, Yunnan. *Specimen: Meilishi Team 318* (PYU, SABG). *Use(s):* none documented.

Berberis jamesiana Forrest & W. W. Sm.
Distribution: China. Sichuan, Yunnan, Xizang (Tibet). *Specimen: Jessica Woo, Ruth Sherman & Jan Salick 619* (MO, SABG). *Use(s):* medicinal, veterinary.

Berberis lecomtei C. K. Schneid.
Distribution: China. Sichuan, Yunnan, Xizang (Tibet). *Specimen: Danica Anderson, Jan Salick, Bee Gunn, Yin Xuezhen & Senadorji 309* (MO, SABG). *Use(s):* medicinal.

Berberis levis Franch.

Distribution: China. Sichuan, Yunnan. *Specimen: Meili Team 24793* (PYU, SABG). *Use(s):* none documented.

Berberis lijiangensis C. Y. Wu ex S. Y. Bao
Distribution: China. Yunnan. *Specimen: Danica Anderson, Ruth Sherman & Senajorji 33* (MO, SABG). *Use(s):* medicinal.

Berberis muliensis Ahrendt
Distribution: China. SW Sichuan, Yunnan, Xizang (Tibet). *Specimen: Danica Anderson & Bee Gunn 376* (MO, SABG). *Use(s):* medicinal.

Berberis pallens Franch.
Distribution: China. Yunnan. *Specimen: Meili Team 24919* (PYU, SABG). *Use(s):* none documented.

Berberis paraspecta Ahrendt
Distribution: China. Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal, firewood.

Berberis platyphylla (Ahrendt) Ahrendt
Distribution: China. SW Sichuan, Xizang (Tibet), NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Berberis pruinosa Franch.
Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Danica Anderson, Jan Salick, Bee Gunn, Yin Xuezhen & Peiji 263* (MO, SABG). *Use(s):* medicinal.

Berberis pseudotibetica C. Y. Yu
Distribution: China. Yunnan. *Specimen: Jessica Woo, Ruth Sherman & Jan Salick 548* (MO, SABG). *Use(s):* none documented.

Berberis tomentulosa Ahrendt
Distribution: China. Yunnan. *Specimen: Meili Team 25727* (PYU, SABG). *Use(s):* none documented.

Berberis tsarongensis Stapf
Distribution: China. Xizang (Tibet), Yunnan. *Specimen: Jessica Woo 524* (MO, SABG). *Use(s):* medicinal, firewood.

Berberis vernalis (C. K. Schneid.) D. F. Chamb. & C. M. Hu
Distribution: China. Hunan, Yunnan. *Specimen: Meili Team 25463* (PYU, SABG). *Use(s):* none documented.

Berberis wilsonii Hemsl.
Distribution: China. Gansu, Guizhou, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Myanmar (Burma)]. *Specimen: Danica Anderson, Ruth Anderson & Senadorji 77* (MO, SABG). *Use(s):* none documented.

Berberis yunnanensis Franch.
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26192* (PYU, SABG). *Use(s):* none documented.

Epimedium L.

Epimedium davidii Franch.
Distribution: China. Sichuan, Yunnan. *Specimen: Jan Salick 9351* (MO, SABG). *Use(s):* none documented.

Mahonia Nutt.

Mahonia bracteolata Takeda
Distribution: China. Sichuan, Yunnan. *Specimen: Danica Anderson 249* (MO, SABG). *Use(s):* food, medicinal, religious, dye.

Mahonia napaulensis DC.
Distribution: China. S Sichuan, SE Xizang (Tibet), Yunnan [Bhutan, India, Indonesia, Myanmar (Burma), Nepal, Sri Lanka; cultivated in Australia, S Europe, and other parts of the world]. *Specimen: Meili Team 25272* (PYU, SABG). *Use(s):* none documented.

Sinopodophyllum T. S. Ying

Sinopodophyllum hexandrum (Royle) T. S. Ying
Distribution: China. Gansu, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan [E Afghanistan, Bhutan, N India, Kashmir, Nepal, Pakistan]. *Specimen: Bee Gunn 146* (MO, SABG). *Use(s):* food, medicinal.

Betulaceae

Betula L.

Betula albosinensis Burkill
Distribution: China. S Gansu, Hebei, Henan, W Hubei, S Ningxia, Qinghai, S Shaanxi, Shanxi, E Sichuan, Yunnan. *Specimen: Fang Zhendong 2003-47* (SABG). *Use(s):* medicinal, handcrafts, firewood.

Betula calcicola (W. W. Sm.) P. C. Li
Distribution: China. SW Sichuan, NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Betula cylindrostachya Lindl. ex Wall.
Distribution: China. SE Xizang (Tibet), NW Yunnan [Bhutan, India]. *Specimen: Wu Sugong et al. WB-101* (KUN). *Use(s):* none documented.

Betula luminifera H. J. P. Winkl.
Distribution: China. Anhui, Fujian, Gansu, N Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Yunnan, Zhejiang. *Specimen: Fang Zhendong 2003-45* (SABG). *Use(s):* none documented.

Betula platyphylla Sukaczev
Distribution: China. Gansu, Hebei, Heilongjiang, Henan, Jiangsu, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shanxi, SW & W Sichuan, SE Xizang (Tibet), NW Yunnan [Japan, N Korea, E Mongolia, Russia]. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn, Yin Xuezhen & Senadorji 308* (MO, SABG). *Use(s):* firewood.

Betula potaninii Batalin
Distribution: China. SE Gansu, Shaanxi, N & W Sichuan, Yunnan. *Specimen: Meili Team 25522* (PYU, SABG). *Use(s):* none documented.

Betula utilis D. Don
Distribution: China. Gansu, Hebei, Ningxia, Qinghai, Shaanxi, W Sichuan, E & S Xizang (Tibet), NW Yunnan [Afghanistan, Bhutan, India, Nepal]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Carpinus L.

Carpinus henryana (H. J. P. Winkler) H. J. P. Winkler
Distribution: China. E Gansu, W Guizhou, Henan, W Hubei, S Shaanxi, E Sichuan, Yunnan. *Specimen: Wu Sugong et al. WB- 112* (KUN). *Use(s):* none documented.

Corylus L.

Corylus chinensis Franch.
Distribution: China. Gansu, Guizhou, Hubei, Shaanxi, SW Sichuan, Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 24914* (PYU, SABG). *Use(s):* food, handcrafts.

Corylus jacquemontii Decne.
Distribution: China. Yunnan. *Specimen: Meili Team 27533* (PYU, SABG). *Use(s):* none documented.

Corylus wangii Hu
Distribution: China. Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Ostryopsis Decne.

Ostryopsis nobilis Balf. f. & W. W. Sm.
Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Meili Team 24835* (PYU, SABG). *Use(s):* food, firewood.

Bignoniaceae

Catalpa Scop.

Catalpa fargesii Bureau
Distribution: China. Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Shaanxi, Shandong, Sichuan, Yunnan (frequently cultivated). *Specimen: Bee Gunn 306* (MO, SABG). *Use(s):* medicinal, ornamental, construction.

Incarvillea Horan.

Incarvillea arguta (Royle) Royle
Distribution: China. Gansu, W & NW Guizhou, SW Sichuan, Xizang (Tibet), N Yunnan [India, Nepal]. *Specimen: Jan Salick et al. 9553* (MO, SABG). *Use(s):* medicinal.

Incarvillea compacta Maxim.
Distribution: China. S Gansu, Qinghai, SW Sichuan, Xizang (Tibet), NW Yunnan. *Specimen: Heidi Schmidt et al. 4042* (MO, SABG). *Use(s):* medicinal.

Incarvillea sinensis Lam.
Distribution: China. W Gansu, Hebei, Heilongjiang, Henan, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Wu Sugong et al. WB-086* (KUN). *Use(s):* none documented.

Boraginaceae

Chionocharis I. M. Johnst.

Chionocharis hookeri (C. B. Clarke) I. M. Johnst.
Distribution: China. SW Sichuan, S Xizang (Tibet), NW Yunnan [Bhutan, NE India, Nepal]. *Specimen: Meili Team 25887* (PYU, SABG). *Use(s):* none documented.

Cynoglossum L.

Cynoglossum amabile Stapf & J. R. Drumm.
Distribution: China. Gansu, Guizhou, Sichuan,

Chionocharis hookeri. Photograph by Fang Zhendong.

Xizang (Tibet), Yunnan [Bhutan]. *Specimen: George Yatskievych 04-162* (KUN, MO). *Use(s):* medicinal.

Cynoglossum lanceolatum Forssk.
Distribution: China. Fujian, S Gansu, Guangdong, Guangxi, Guizhou, Hainan, Henan, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang [SW & W Asia, Cambodia, India, Kashmir, Laos, Malaysia, Myanmar (Burma), Nepal, Pakistan, the Philippines, Sri Lanka, N Thailand; Africa]. *Specimen: Meili Team 26120* (PYU, SABG). *Use(s):* medicinal.

Cynoglossum wallichii G. Don
Distribution: China. Gansu, Qinghai, Sichuan, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, India, Kashmir, Myanmar (Burma), Nepal, Pakistan]. *Specimen: Meili Team 26470* (PYU, SABG). *Use(s):* medicinal.

Ehretia P. Browne

Ehretia corylifolia C. H. Wright
Distribution: China. Yunnan. *Specimen: Meili Team 24843* (PYU, SABG). *Use(s):* medicinal.

Hackelia Opiz

Hackelia brachytuba (Diels) I. M. Johnst.
Distribution: China. S Gansu, Sichuan, S Xizang (Tibet), NW Yunnan [Nepal]. *Specimen: Meili Team 25398* (PYU, SABG). *Use(s):* none documented.

Microula Benth.

Microula bhutanica (T. Yamaz.) H. Hara
Distribution: China. SW Sichuan, N Yunnan [Bhutan]. *Specimen: Meili Team 25880* (PYU, SABG). *Use(s):* none documented.

Microula sikkimensis (C. B. Clarke) Hemsl.
Distribution: China. Gansu, Qinghai, SW Shaanxi, W Sichuan, SE Xizang (Tibet), NW Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Meili Team 26897* (PYU, SABG). *Use(s):* none documented.

Onosma L.

Onosma album W. W. Sm. & Jeffrey
Distribution: China. NW Yunnan. *Specimen: George Yatskievych 04-199* (KUN, MO). *Use(s):* none documented.

Onosma multiramosum Hand.-Mazz.
Distribution: China. SW Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 26050* (PYU, SABG). *Use(s):* medicinal.

Rochelia Rchb.

Rochelia bungei Trautv.
Distribution: China. N Xinjiang, Yunnan [Afghanistan, Kazakhstan, Kyrgyzstan, Mongolia, Russia, Tajikistan, Turkmenistan, Uzbekistan; SW Asia]. *Specimen: Danica Anderson 19* (MO, SABG). *Use(s):* none documented.

Trigonotis Steven

Trigonotis gracilipes I. M. Johnst.
Distribution: China. SW Sichuan, S Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25546* (PYU, SABG). *Use(s):* none documented.

Brassicaceae

Arabis L.

Arabis bijuga G. Watt
Distribution: China. Sichuan, Yunnan [Kashmir, Pakistan]. *Specimen: Jan Salick et al. 9481* (MO, SABG). *Use(s):* medicinal.

Arabis paniculata Franch.
Distribution: China. Gansu, Guizhou, Hubei, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Kashmir, Nepal]. *Specimen: Meili Team 25068* (PYU, SABG). *Use(s):* none documented.

Arabis pendula L.—see *Catolobus pendulus* (L.) Al-Shebaz

Berteroella O. E. Schulz

Berteroella maximowiczii (Palib.) O. E. Schulz ex Loes.

Distribution: China. Hebei, Henan, Jiangsu, Liaoning, Shandong, Yunnan, Zhejiang [Japan, Korea]. *Specimen: Danica Anderson 84* (MO, SABG). *Use(s):* medicinal.

Brassica L.

Brassica sp.

Distribution: China. Cultivated [worldwide]. *Specimen: Jan Salick 9734* (MO, SABG). *Use(s):* food, herb and/or spice.

Capsella Medik.

Capsella bursa-pastoris (L.) Medik.

Distribution: China. Throughout [adventive worldwide in temperate regions]. *Specimen: Meili Team 25075B* (PYU, SABG). *Use(s):* food, medicinal, oil.

Cardamine L.

Cardamine franchetiana Diels

Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25911* (PYU, SABG). *Use(s):* none documented.

Cardamine griffithii Hook. f. & Thomson

Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Wu Sugong et al. WB- 220* (KUN). *Use(s):* none documented.

Cardamine impatiens L.

Distribution: China. Anhui, Fujian, Gansu, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang [Afghanistan, Bhutan, India, Japan, Kashmir, Kazakhstan, Korea, Kyrgyzstan, Nepal, Pakistan, Russia, Sikkim, Tajikistan, Uzbekistan; SW Asia, Europe, naturalized in S Africa and North America]. *Specimen: Meili Team 26770* (PYU, SABG). *Use(s):* medicinal.

Cardamine macrophylla Willd.

Distribution: China. Anhui, Gansu, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangxi, Jilin, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Japan, Kashmir, Kazakhstan, Mongolia, Nepal, Pakistan, Russia, Sikkim]. *Specimen: Meili Team 24825* (PYU, SABG). *Use(s):* food, medicinal.

Cardamine paucifolia Hand.-Mazz.

Distribution: China. Yunnan. *Specimen: Meili Team 24815* (PYU, SABG). *Use(s):* none documented.

Cardamine pulchella (Hook. f. & Thomson) Al-Shehbaz & G. Yang

Distribution: China. Qinghai, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: George Yatskievych 04-066* (KUN, MO). *Use(s):* none documented.

Cardamine yunnanensis Franch.

Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Meili Team 25335* (PYU, SABG). *Use(s):* none documented.

Catolobus Al-Shehbaz

Catolobus pendulus (L.) Al-Shehbaz

Distribution: China. Gansu, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Japan, Kazakhstan, Korea, Mongolia, Russia; Europe]. *Specimen: Meili Team 26358* (PYU, SABG). *Use(s):* medicinal.

Crucihimalaya Al-Shehbaz, O'Kane & R. A. Price

Crucihimalaya himalaica (Edgew.) Al-Shehbaz, O'Kane & R. A. Price

Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, India, Kashmir, Nepal, Pakistan, Sikkim]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Crucihimalaya stricta (Cambess.) Al-Shehbaz, O'Kane & R. A. Price

Distribution: China. Xizang (Tibet), Yunnan [India, Nepal, Pakistan]. *Specimen: Meili Team 25661* (PYU, SABG). *Use(s):* none documented.

Draba L.

Draba amplexicaulis Franch.

Distribution: China. Sichuan, Xizang (Tibet),

Yunnan. *Specimen: Meili Team 25009* (PYU, SABG). *Use(s):* none documented.

Draba eriopoda Turcz.
Distribution: China. Gansu, Hubei, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Bhutan, India, Mongolia, Nepal, Russia, Sikkim]. *Specimen: Meili Team 25909* (PYU, SABG). *Use(s):* none documented.

Draba involucrata (W. W. Sm.) W. W. Sm.
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 27506* (PYU, SABG). *Use(s):* none documented.

Draba jucunda W. W. Sm.
Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 28165* (PYU, SABG). *Use(s):* none documented.

Draba ladyginii Pohle
Distribution: China. Gansu, Hebei, Hubei, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25922* (PYU, SABG). *Use(s):* none documented.

Draba lichiangensis W. W. Sm.
Distribution: China. Qinghai, Sichuan, Xizang (Tibet), NW Yunnan [Bhutan, Nepal]. *Specimen: Heidi Schmidt et al. 4036* (MO, SABG). *Use(s):* none documented.

Draba oreades Schrenk ex Fisch. & C. A. Mey.
Distribution: China. Gansu, Nei Mongol, Qinghai, Shaanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Bhutan, India, Kashmir, Kazakhstan, Kyrgyzstan, Mongolia, Pakistan, Russia, Sikkim, Tajikistan]. *Specimen: Jan Salick & Sonam Dorje 9625* (MO, SABG). *Use(s):* medicinal.

Draba senilis O. E. Schulz
Distribution: China. Qinghai, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Fang Zhendong 221* (SABG). *Use(s):* none documented.

Draba surculosa Franch.
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 24733* (PYU, SABG). *Use(s):* none documented.

Erysimum L.

Erysimum benthamii Monnet
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Danica Anderson 115* (MO, SABG). *Use(s):* religious.

Erysimum cheiranthoides L.
Distribution: China. Heilongjiang, Jilin, Nei Mongol, Xinjiang, Yunnan [Japan, Kazakhstan, Korea, Mongolia, Russia; N Africa, Europe, North America]. *Specimen: Meili Team 25180* (PYU, SABG). *Use(s):* none documented.

Eutrema R. Br.

Eutrema altaicum (C. A. Meyer) Al-Shehbaz & Warwick
Distribution: China. Gansu, Qinghai, Xinjiang, Xizang (Tibet), Yunnan [Kazakhstan, Kyrgyzstan, Mongolia, Russia, Tajikistan]. *Specimen: Kurt Hoffmeister, Deng Zhiwei & Anthony Amend 80* (MO, SABG). *Use(s):* none documented.

Eutrema heterophyllum (W. W. Sm.) H. Hara
Distribution: China. Gansu, Hebei, Qinghai, Shaanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Bhutan, Kazakhstan, Kyrgyzstan, Nepal, Tajikistan]. *Specimen: Meili Team 25867* (PYU, SABG). *Use(s):* none documented.

Eutrema himalaicum Hook. f. & Thomson
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, Sikkim]. *Specimen: Meili Team 25927* (PYU, SABG). *Use(s):* none documented.

Eutrema verticillatum (Jeffrey & W. W. Sm.) Al-Shehbaz & Warwick
Distribution: China. Xizang (Tibet), Yunnan. *Specimen: Meili Team 25910* (PYU, SABG). *Use(s):* none documented.

Eutrema yunnanense Franch.
Distribution: China. Anhui, Gansu, Hebei, Hubei, Hunan, Jiangsu, Jiangxi, Ningxia, Shaanxi, Sichuan, Xizang (Tibet), Yunnan, Zhejiang. *Specimen: Meili Team 25018* (PYU, SABG). *Use(s):* none documented.

Lepidium L.

Lepidium apetalum Willd.
Distribution: China. Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang [India, Japan, Kazakhstan, Korea, Mongolia, Nepal, Pakistan]. *Specimen: Meili Team s.n.* (PYU, SABG). *Use(s):* food, medicinal.

Lepidium cuneiforme C. Y. Wu

Distribution: China. Gansu, Guizhou, Jiangxi, Qinghai, Shaanxi, Sichuan, Yunnan. *Specimen: Danica Anderson 60* (MO, SABG). *Use(s):* herb and/or spice.

Nasturtium W. T. Aiton

Nasturtium officinale R. Brown

Distribution: China. Anhui, Guangdong, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Jiangsu, Jiangxi, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan [native to SW Asia, Europe, widely naturalized elsewhere]. *Specimen: George Yatskievych 04-146* (KUN, MO). *Use(s):* food.

Noccaea Moench.

Noccaea andersonii (Hook. f. & Thomson) Al-Shehbaz

Distribution: China. Xizang (Tibet), Yunnan [Bhutan, Kashmir, Pakistan, Sikkim]. *Specimen: Meili Team 24976* (PYU, SABG). *Use(s):* none documented.

Noccaea cochleariforme (DC.) Á. Löve & D. Löve

Distribution: China. Gansu, Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Xinjiang, Xizang (Tibet), Yunnan [Kashmir, Kazakhstan, Mongolia, Pakistan, Russia, Tajikistan]. *Specimen: Meili Team 25153* (PYU, SABG). *Use(s):* none documented.

Pegaeophyton Hayek & Hand.-Mazz.

Pegaeophyton scapiflorum (Hook. f. & Thomson) C. Marquand & Airy Shaw

Distribution: China. Qinghai, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Wayne Law 71* (MO, SABG). *Use(s):* medicinal.

Raphanus L.

Raphanus sativus L.

Distribution: China. Cultivated [cultivated worldwide]. *Use(s):* food.

Rorippa Scop.

Rorippa palustris (L.) Besser

Distribution: China. Anhui, Gansu, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, India, Japan, Kazakhstan, Korea, Mongolia, Nepal, Pakistan, Russia, Sikkim, Tajikistan, Turkmenistan, Uzbekistan; Europe, North America, introduced in Australia, South America]. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn & Yin Xuezhen 345* (MO, SABG). *Use(s):* none documented.

Solms-laubachia Muschl. ex Diels

Solms-laubachia linearifolia (W. W. Sm.) O. E. Schulz

Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26570* (PYU, SABG). *Use(s):* medicinal.

Solms-laubachia minor Hand.-Mazz.

Distribution: China. Sichuan, Yunnan. *Specimen: Meili Team 27495* (PYU, SABG). *Use(s):* medicinal.

Taphrospermum C. A. Mey.—see *Eutrema* R. Br.

Thlaspi L.

Thlaspi andersonii (Hook. f. & Thomson) O. E. Schulz—see *Noccaea andersonii* (Hook. f. & Thomson) Al-Shehbaz

Thlaspi arvense L.

Distribution: China; widespread [Afghanistan, Bhutan, India, Japan, Kashmir, Kazakhstan, Korea, Kyrgyzstan, Mongolia, Nepal, Pakistan, Russia, Sikkim, Tajikistan, Turkmenistan, Uzbekistan; Africa, SW Asia; introduced in Australia, North America, South America]. *Specimen: Meili Team 25302* (PYU, SABG). *Use(s):* medicinal.

Thlaspi cochleariforme DC.—see *Noccaea cochleariforme* (DC.) Á. Löve & D. Löve

Yinshania Ma & Y. Z. Zhao

Yinshania acutangula (O. E. Schulz) Y. H. Zhang

Distribution: China. Gansu, Hebei, Nei Mongol, Qinghai, Shaanxi, Sichuan, Yunnan. *Specimen: Meili Team 26671* (PYU, SABG). *Use(s):* none documented.

Yinshania zayuensis Y. H. Zhang

Distribution: China. Hubei, Sichuan, Xizang

(Tibet), Yunnan. *Specimen: Danica Anderson 121* (MO, SABG). *Use(s):* none documented.

Buxaceae

Buxus L.

Buxus bodinieri H. Lév.

Distribution: China. Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Jiangxi, S Shaanxi, Sichuan, Yunnan, Zhejiang. *Specimen: Meili Team 27330* (PYU, SABG). *Use(s):* none documented.

Buxus rugulosa Hatus.

Distribution: China. SW & W Sichuan, E & SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25782* (PYU, SABG). *Use(s):* none documented.

Sarcococca Lindl.

Sarcococca ruscifolia Stapf

Distribution: China. Gansu, Guangxi, Guizhou, Hubei, Hunan, Shanxi, Sichuan, Yunnan. *Specimen: Jessica Woo, Ruth Sherman & Jan Salick 549* (MO, SABG). *Use(s):* none documented.

Cactaceae

Opuntia Mill.

Opuntia ficus-indica (L.) Mill.

Distribution: China. Cultivated and naturalized in Guangxi, Guizhou, Sichuan, Xizang (Tibet), Yunnan [cultivated and naturalized worldwide in tropical and subtropical regions]. *Specimen: George Yatskievych 04-177* (KUN, MO). *Use(s):* food, construction.

Campanulaceae

Adenophora Fisch.

Adenophora capillaris Hemsl.

Distribution: China. Chongqing, Guizhou, Hebei, W Henan, W Hubei, SE Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan, W Yunnan [Myanmar (Burma)]. *Specimen: Meili Team 26810* (PYU, SABG). *Use(s):* medicinal.

Adenophora coelestis Diels

Distribution: China. SW Sichuan, Yunnan. *Specimen: Fang Zhendong & Zhang Canming 2464* (SABG). *Use(s):* medicinal.

Adenophora jasionifolia Franch.

Distribution: China. W Sichuan, E Xizang (Tibet), Yunnan. *Specimen: Fang Zhendong 216* (SABG). *Use(s):* medicinal.

Adenophora khasiana (Hook. f. & Thomson) Collett & Hemsl.

Distribution: China. SW Sichuan, Xizang (Tibet), Yunnan [E India, Myanmar (Burma)]. *Specimen: Fang Zhendong 1805* (SABG). *Use(s):* medicinal.

Campanula L.

Campanula aristata Wall.

Distribution: China. S Gansu, E & S Qinghai, Shaanxi, NW & W Sichuan, Xizang (Tibet), NW Yunnan [India, Nepal, Pakistan]. *Specimen: Meili Team 25978* (PYU, SABG). *Use(s):* medicinal.

Campanula cana Wall.

Distribution: China. NW Guizhou, SW Sichuan, S & E Xizang (Tibet), N Yunnan [Bhutan, N India, Nepal]. *Specimen: Meili Team 26044* (PYU, SABG). *Use(s):* medicinal.

Campanula pallida Wall. (syn. *Campanula colorata* Wall.)

Distribution: China. W Guizhou, W Sichuan, S Xizang (Tibet), Yunnan [Afghanistan, Bhutan, India, Laos, Myanmar (Burma), Nepal, Pakistan, Thailand]. *Specimen: Meili Team 27860* (PYU, SABG). *Use(s):* medicinal.

Codonopsis Wall.

Codonopsis benthamii Hook. f. & Thomson

Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, NE India, N Myanmar (Burma), Nepal]. *Specimen: Fang Zhendong 1729* (SABG). *Use(s):* medicinal.

Codonopsis bulleyana Forrest ex Diels

Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meilishi Team 82* (PYU, SABG). *Use(s):* medicinal.

Codonopsis convolvulacea Kurz

Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan [Bhutan, N Myanmar (Burma), Nepal]. *Specimen: Meili Team 26377* (PYU, SABG). *Use(s):* medicinal.

Codonopsis foetens Hook. f. & Thomson (syn. *Codonopsis nervosa* (Chipp) Nannf.)

Distribution: China. Gansu, S Qinghai, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Fang Zhendong 1630* (SABG). *Use(s):* medicinal.

Codonopsis pilosula (Franch.) Nannf.
Distribution: Chongqing, E Gansu, N Guizhou, Hebei, Heilongjiang, Henan, W Hubei, NW Hunan, Jilin, Liaoning, Nei Mongol, Ningxia, E Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, NW Yunnan [Korea, Mongolia, Russia; one subspecies widely cultivated]. *Specimen: Meili Team 26420* (PYU, SABG). *Use(s):* medicinal.

Codonopsis viridiflora Maxim.
Distribution: China. SE Gansu, S Ningxia, E Qinghai, Shaanxi, W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 28170* (PYU, SABG). *Use(s):* medicinal.

Cyananthus Wall. ex Benth.

Cyananthus delavayi Franch.
Distribution: China. SW Sichuan, C & NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Cyananthus flavus C. Marquand
Distribution: China. SW Sichuan, NE & NW Yunnan. *Specimen: Jessica Woo & Ruth Sherman 443* (MO, SABG). *Use(s):* none documented.

Cyananthus hookeri C. B. Clarke
Distribution: China. Gansu, Qinghai, Sichuan, Xizang (Tibet), Yunnan [Bhutan, Sikkim, Nepal]. *Specimen: Meilishi Team 35* (PYU, SABG). *Use(s):* none documented.

Cyananthus lichiangensis W. W. Sm.
Distribution: China. SW Sichuan, N Yunnan. *Specimen: Heidi Schmidt et al. 4098* (MO, SABG). *Use(s):* none documented.

Cyananthus macrocalyx Franch.
Distribution: China. SE Gansu, S Qinghai, W Sichuan, SE Xizang (Tibet), Yunnan [Bhutan, NE India (Assam, Sikkim), Myanmar (Burma), E Nepal]. *Specimen: Meili Team 26881* (PYU, SABG). *Use(s):* none documented.

Peracarpa Hook. f. & Thompson
Peracarpa carnosa (Wall.) Hook. f. & Thomson
Distribution: China. Chongqing, Guizhou, Hubei, S Jiangsu, Sichuan, Taiwan, S Xizang (Tibet), W Yunnan [Bhutan, India, Japan, Kashmir, Nepal, the Philippines, Russia, Thailand. *Specimen: Meili Team 25254* (PYU, SABG). *Use(s):* none documented.

Cannabaceae

Cannabis L.

Cannabis sativa L.
Distribution: China. Cultivated and naturalized throughout [cultivated and naturalized in temperate regions worldwide]. Specimen: *G. Yatskievych 04-160* (KUN, MO). *Use(s):* food, medicinal, handcrafts, forage and/or fodder.

Celtis L.

Celtis cerasifera C. K. Schneid.
Distribution: China. Guangxi, Guizhou, N Hunan, S Shaanxi, Sichuan, SE Xizang (Tibet), Yunnan, Zhejiang. *Specimen: Danica Anderson 102* (MO, SABG). *Use(s):* forage and/or fodder, firewood.

Caprifoliaceae

Abelia R. Brown—see *Zabelia* (Rehder) Makino

Abelia uniflora R. Br.
Distribution: China. Fujian, Gansu, Guangxi, Guizhou, Henan, Hunan, Shaanxi, Sichuan, Yunnan. *Specimen: Jessica Woo, Ruth Sherman & Jan Salick 608* (MO, SABG). *Use(s):* firewood.

Acanthocalyx Tiegh.

Acanthocalyx nepalensis (D. Don) M. J. Cannon
Distribution: China. W Sichuan, SE Xizang (Tibet), N Yunnan [Bhutan, N India, Nepal]. *Specimen: Meili Team 26264* (PYU, SABG). *Use(s):* medicinal.

Dipelta Maxim.

Dipelta yunnanensis Franch.
Distribution: China. Gansu, Guizhou, Hubei, Shaanxi, Sichuan, Yunnan. *Specimen: Meili Team 24883* (PYU, SABG). *Use(s):* medicinal.

Dipsacus L.

Dipsacus asper Wall. ex C. B. Clarke
Distribution: China. Chongqing, N Guangdong, N & W Guangxi, Guizhou, W Hubei, Sichuan, S Xizang (Tibet), Yunnan [Bhutan, India, Myanmar (Burma), Nepal]. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn, Yin Xuezhen & Senadorji 330* (MO, SABG). *Use(s):* medicinal.

Leycesteria Wall.

Leycesteria formosa Wall.
Distribution: China. W Guizhou, W Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Myan-

mar (Burma), Nepal, Pakistan]. *Specimen: Meili Team 25202* (PYU, SABG). *Use(s):* medicinal.

Lonicera L.

Lonicera acuminata Wall.
Distribution: China. Anhui, Fujian, SE Gansu, Guangdong, Guangxi, W Guizhou, Hubei, NW Hunan, Jiangxi, S Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Indonesia, Myanmar (Burma), the Philippines]. *Specimen: Meili Team 24880* (PYU, SABG). *Use(s):* medicinal.

Lonicera angustifolia Wall. ex DC. (syn. *Lonicera myrtillus* Hook. f. & Thomson)
Distribution: China. SW Sichuan, Xizang (Tibet), Yunnan [Afghanistan, N Myanmar (Burma)]. *Specimen: Meili Team 25480* (PYU, SABG). *Use(s):* medicinal.

Lonicera chrysantha Turcz. ex Ledeb.
Distribution: China. Anhui, Gansu, Guizhou, Hebei, S Heilongjiang, W Henan, Hubei, Jiangsu, Jiangxi, E Jilin, S Liaoning, S Nei Mongol, Ningxia, E Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xizang (Tibet), Yunnan, Zhejiang [N Korea, Russia]. *Specimen: Meili Team 25642* (PYU, SABG). *Use(s):* medicinal.

Lonicera cyanocarpa Franch.
Distribution: China. W Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Ruizi La Team 160* (MO, SABG). *Use(s):* firewood.

Lonicera ferdinandii Franch.
Distribution: China. S Gansu, S Hebei, Henan, Liaoning, Ningxia, E Qinghai, W Shaanxi, Shanxi, N Sichuan; Yunnan [N Korea]. *Specimen: Meili Team 24849* (PYU, SABG). *Use(s):* none documented.

Lonicera fragrantissima Lindl. & J. Paxton
Distribution: China. Anhui, Gansu, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Shanxi, Sichuan, Yunnan, Zhejiang. *Specimen: Meili Team 27302* (PYU, SABG). *Use(s):* medicinal, firewood.

Lonicera gynochlamydia Hemsl.
Distribution: Anhui, Gansu, Guizhou, W Hubei, Shaanxi, Sichuan, Yunnan. *Specimen: Jessica Woo, Ruth Sherman & Jan Salick 614* (MO, SABG). *Use(s):* handcrafts, forage and/or fodder, firewood.

Lonicera hispida Pall. ex Roem. & Schult.
Distribution: China. Gansu, W Hebei, S Ningxia, E Qinghai, S Shaanxi, Shanxi, W Sichuan, N Xinjiang, Xizang (Tibet), NW Yunnan. *Specimen: Zhang Canming 3451* (SABG). *Use(s):* medicinal.

Lonicera nigra L. (syn. *Lonicera lanceolata* Wall.)
Distribution: China. W Anhui, NE Guizhou, W Hubei, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal]. *Specimen: Meili Team 24821* (PYU, SABG). *Use(s):* firewood.

Lonicera setifera Franch.
Distribution: China. Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 24879* (PYU, SABG). *Use(s):* medicinal.

Lonicera tangutica Maxim.
Distribution: China. Anhui, Gansu, Guizhou, Hebei, Henan, W Hubei, W Hunan, Ningxia, E Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25007* (PYU, SABG). *Use(s):* forage and/or fodder, tools.

Lonicera trichosantha Bureau & Franch.
Distribution: China. S Gansu, S Shaanxi, W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25150* (PYU, SABG). *Use(s):* handcrafts, tools.

Patrinia Juss.

Patrinia monandra C. B. Clarke
Distribution: China. Anhui, Chongqing, SE Gansu, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, S Shaanxi, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang. *Specimen: Meili Team 28138* (PYU, SABG). *Use(s):* medicinal.

Pterocephalus Vaill. ex Adans.

Pterocephalus hookeri (C. B. Clarke) Diels
Distribution: China. S Qinghai, W Sichuan, Xizang (Tibet), N Yunnan [India, Nepal]. *Specimen: Bee Gunn & Wayne Law 123* (MO, SABG). *Use(s):* medicinal.

Sambucus L.—see Adoxaceae

Triosteum L.

Triosteum himalayanum Wall.
Distribution: China. Hubei, Hunan, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [India, Nepal,

Sikkim]. *Specimen: Meili Team 25498* (PYU, SABG). *Use(s):* medicinal, poisonous.

Triplostegia Wall. ex DC.

Triplostegia glandulifera Wall. ex DC.
Distribution: China. Gansu, Hubei, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Bhutan, India, Myanmar (Burma), Nepal]. *Specimen: Meili Team 26079* (PYU, SABG). *Use(s):* medicinal.

Valeriana L.

Valeriana daphniflora Hand.-Mazz.
Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Meili Team 26355* (PYU, SABG). *Use(s):* medicinal.

Valeriana flaccidissima Maxim.
Distribution: China. NW Yunnan. *Specimen: Kurt Hoffmeister, Deng Zhiwei & Anthony Amend 21* (MO, SABG). *Use(s):* medicinal.

Valeriana hardwickii Wall.
Distribution: China. Chongqing, Fujian, Guangxi, Guizhou, SW Hubei, W Hunan, Jiangxi, SW Sichuan, S & SE Xizang (Tibet), N Yunnan [Bhutan, India, Myanmar (Burma), Nepal, Thailand]. *Specimen: Meili Team 27541* (PYU, SABG). *Use(s):* medicinal.

Valeriana minutiflora Hand.-Mazz.
Distribution: China. W Sichuan, Yunnan. *Specimen: Meili Team 26920* (PYU, SABG). *Use(s):* none documented.

Viburnum L.—see Adoxaceae

Zabelia (Rehder) Makino

Zabelia dielsii (Graebn.) Makino (syn. *Abelia umbellata* (Graebn. & Buchw.) Rehder)
Distribution: China. Anhui, Fujian, Gansu, Guizhou, Hebei, Henan, Hubei, Jiangxi, Ningxia, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan, Zhejiang. *Specimen: Wu Sugong et al. WB-106* (KUN). *Use(s):* none documented.

Zabelia triflora (R. Br. ex Wall.) Makino
Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan [Afghanistan, NW India, Nepal, Pakistan]. *Specimen: Fang Zhendong 246* (SABG). *Use(s):* none documented.

Caryophyllaceae

Arenaria L.

Arenaria barbata Franch.
Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Fang Zhendong 1632* (SABG). *Use(s):* none documented.

Arenaria debilis Hook. f.
Distribution: China. SE Xizang (Tibet), NW Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Meili Team 26189* (PYU, SABG). *Use(s):* none documented.

Arenaria inconspicua Hand.-Mazz.
Distribution: China. NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Arenaria kansuensis Maxim.
Distribution: China. S Gansu, Qinghai, W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Jan Salick & Sonam Dorje 9616* (MO, SABG). *Use(s):* medicinal.

Arenaria lancangensis L. H. Zhou
Distribution: China. SE Qinghai, W Sichuan, SE Xizang (Tibet), SW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Arenaria orbiculata Royle ex Edgew. & Hook. f.
Distribution: China. S Sichuan, SE Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Meili Team 24814* (PYU, SABG). *Use(s):* none documented.

Arenaria pogonantha W. W. Sm.
Distribution: China. W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 26519* (PYU, SABG). *Use(s):* none documented.

Arenaria polysperma C. Y. Wu ex L. H. Zhou
Distribution: China. NW Yunnan. *Specimen: Meili Team 28072* (PYU, SABG). *Use(s):* none documented.

Arenaria polytrichoides Edgew. & Hook. f.
Distribution: China. SE Qinghai, W Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25899* (PYU, SABG). *Use(s):* medicinal.

Arenaria pseudostellaria C. Y. Wu, L. H. Zhou & W. L. Wagner
Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Meili Team 25975* (PYU, SABG). *Use(s):* none documented.

Arenaria roseiflora Sprague

Distribution: China. NW Yunnan. *Specimen: Meili Team 26318A* (PYU, SABG). *Use(s):* none documented.

Arenaria rotundifolia M. Bieb.

Distribution: China. Yunnan [Kazakhstan, Kyrgyzstan]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Arenaria serpyllifolia L.

Distribution: China. Widespread [N Africa, Asia, Australia, Europe, North America]. *Specimen: Meili Team 27419* (PYU, SABG). *Use(s):* none documented.

Arenaria trichophora Franch.

Distribution: China. SW Sichuan, SE Xizang (Tibet), N Yunnan. *Specimen: Meili Team 28016* (PYU, SABG). *Use(s):* none documented.

Arenaria trichophylla C. Y. Wu ex L. H. Zhou

Distribution: China. SW Sichuan, Yunnan. *Specimen: Meili Team 26910* (PYU, SABG). *Use(s):* none documented.

Arenaria yunnanensis Franch.

Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Bee Gunn 199* (MO, SABG). *Use(s):* medicinal.

Cerastium L.

Cerastium fontanum Baumg.

Distribution: China. Throughout [adventive worldwide]. *Specimen: Meili Team 25655* (PYU, SABG). *Use(s):* medicinal.

Cerastium glomeratum Thuill.

Distribution: China. Throughout [adventive worldwide]. *Specimen: Meili Team 25143* (PYU, SABG). *Use(s):* medicinal.

Cerastium pusillum Ser.

Distribution: China. Gansu, SW Nei Mongol, Ningxia, Qinghai, Xinjiang, Yunnan [Afghanistan, Kazakhstan, Mongolia, Russia]. *Specimen: Jessica Woo & Ruth Sherman 441* (MO, SABG). *Use(s):* none documented.

Drymaria Willd. ex Schult.

Drymaria cordata (L.) Willd. ex Roem. & Schult.

Distribution: China. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Central & South America]. *Specimen: Kurt Hoffmeister, Deng Zhiwei & Anthony Amend 78A* (MO, SABG). *Use(s):* none documented.

Psammosilene W. C. Wu & C. Y. Wu

Psammosilene tunicoides W. C. Wu & C. Y. Wu

Distribution: China. W Guizhou, SW Sichuan, SE Xizang (Tibet), Yunnan. *Specimen: Jessica Woo & Ruth Sherman 489* (MO, SABG). *Use(s):* none documented.

Pseudostellaria Pax

Pseudostellaria himalaica (Franch.) Pax

Distribution: China. Gansu, Hubei, Sichuan, Xizang (Tibet), Yunnan [Japan, Russia]. *Specimen: Meili Team 25331* (PYU, SABG). *Use(s):* none documented.

Pseudostellaria sylvatica (Maxim.) Pax

Distribution: China. Gansu, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Jilin, Liaoning, Qinghai, Shaanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Bhutan, Japan, Korea, Russia]. *Specimen: Meili Team 25599* (PYU, SABG). *Use(s):* medicinal.

Pseudostellaria tibetica Ohwi

Distribution: China. W Sichuan, E Xizang (Tibet), Yunnan. *Specimen: Meili Team 25410* (PYU, SABG). *Use(s):* none documented.

Silene L.

Silene asclepiadea Franch.

Distribution: China. Guizhou, Sichuan, Yunnan. *Specimen: Meili Team 26752* (PYU, SABG). *Use(s):* none documented.

Silene baccifera (L.) Roth

Distribution: China. Anhui, Fujian, Gansu, Guangxi, Guizhou, Hebei, Henan, Hubei, Jiangsu, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, Japan, Kashmir, Kazakhstan, Korea, Nepal, Russia, Sikkim; Europe]. *Specimen: Jessica Woo & Ruth Sherman 485* (MO, SABG). *Use(s):* forage and/or fodder.

Silene conoidea L.

Distribution: China. Xinjiang, Xizang (Tibet), Yunnan [Africa, Asia, Europe]. *Specimen: George Yatskievych 04-170* (KUN, MO). *Use(s):* medicinal.

Silene esquamata W. W. Sm.

Distribution: China. Sichuan, Yunnan. *Specimen: Meili Team 26483* (PYU, SABG). *Use(s):* medicinal.

Silene monbeigii W. W. Sm.
Distribution: China. Sichuan, SE Xizang (Tibet), Yunnan. *Specimen: George Yatskievych 04-147* (KUN, MO). *Use(s):* medicinal.

Silene nepalensis Majumdar
Distribution: China. Qinghai, Sichuan, Xizang (Tibet), Yunnan [Bhutan, Nepal, Sikkim]. *Specimen: Meili Team 26653* (PYU, SABG). *Use(s):* none documented.

Silene nigrescens (Edgew.) Majumdar
Distribution: China. SW Sichuan, S Xizang (Tibet), NW Yunnan [Bhutan, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Fang Zhendong 238* (SABG). *Use(s):* none documented.

Silene stewartiana Diels
Distribution: China. NW Yunnan. *Specimen: Meili Team 28158* (PYU, SABG). *Use(s):* none documented.

Silene yetii Bocquet
Distribution: China. Gansu, Qinghai, Sichuan, Xizang (Tibet). *Specimen: Meili Team 26249* (PYU, SABG). *Use(s):* none documented.

Stellaria L.

Stellaria decumbens Edgew.
Distribution: China. Qinghai, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Pakistan, Sikkim]. *Specimen: Meili Team 26178* (PYU, SABG). *Use(s):* none documented.

Stellaria graminea L.
Distribution: China. Gansu, Hubei, Qinghai, Shandong, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Afghanistan, India, Kashmir, Nepal, Pakistan, Russia; Europe]. *Specimen: Meili Team 25889* (PYU, SABG). *Use(s):* none documented.

Stellaria media (L.) Vill.
Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Afghanistan, Bhutan, India, Japan, Korea, Pakistan, Russia, Sikkim; Europe]. *Specimen: Meili Team 25688* (PYU, SABG). *Use(s):* none documented.

Stellaria palustris Ehrh. ex Retz.
Distribution: China. Gansu, Hebei, Heilongjiang, Henan, Liaoning, Nei Mongol, Shandong, Shaanxi, Shanxi, Sichuan, Yunnan [Afghanistan, Japan, Kazakhstan, Mongolia, Russia; SW Asia, Europe]. *Specimen: George Yatskievych 04-070* (KUN, MO). *Use(s):* none documented.

Stellaria subumbellata Edgew.
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [India, Kashmir, Nepal, Sikkim]. *Specimen: Meili Team 26317* (PYU, SABG). *Use(s):* none documented.

Stellaria uda F. N. Williams
Distribution: China. Qinghai, Sichuan, Xinjiang, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25537* (PYU, SABG). *Use(s):* none documented.

Stellaria vestita Kurz
Distribution: China. Fujian, Gansu, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangxi, Shaanxi, Shandong, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Indonesia, Myanmar (Burma), Nepal, New Guinea, the Philippines, Sikkim, Vietnam]. *Specimen: Meili Team 27390* (PYU, SABG). *Use(s):* none documented.

Stellaria wushanensis F. N. Williams
Distribution: China. Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Yunnan, Zhejiang. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn & Yin Xuezhen 371* (MO, SABG). *Use(s):* forage and/or fodder.

Celastraceae *Use(s):* none documented.

Celastrus L.

Celastrus angulatus Maxim.
Distribution: China. Anhui, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Sichuan, Yunnan. *Specimen: Meili Team 27381* (PYU, SABG). *Use(s):* medicinal.

Celastrus glaucophyllus Rehder & E. H. Wilson
Distribution: China. Guizhou, Hubei, Hunan, S Shaanxi, Sichuan, Yunnan. *Specimen: Fang Zhendong 2003-48* (SABG). *Use(s):* none documented.

Celastrus stylosus Wall.

Distribution: China. Anhui, Chongqing, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Yunnan [Bhutan, India, Myanmar (Burma), Nepal, N Thailand]. *Specimen: Meili Team 24700* (PYU, SABG). *Use(s):* medicinal, poisonous.

Euonymus L.

Euonymus clivicola W. W. Sm.

Distribution: China. Qinghai, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, Myanmar (Burma), Nepal]. *Specimen: Meili Team 27351* (PYU, SABG). *Use(s):* none documented.

Euonymus fortunei (Turcz.) Hand.-Mazz.

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Yunnan, Zhejiang [India, Indonesia, Japan, Korea, Laos, Myanmar (Burma), Pakistan, the Philippines, Thailand, Vietnam; cultivated in Africa; Europe; North America; Oceania; South America]. *Specimen: Meili Team 27903* (PYU, SABG). *Use(s):* none documented.

Euonymus frigidus Wall.

Distribution: China. Guizhou, Henan, Hubei, Ningxia, Qinghai, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Myanmar (Burma), Nepal]. *Specimen: Meili Team 27447* (PYU, SABG). *Use(s):* none documented.

Euonymus grandiflorus Wall.

Distribution: China. Gansu, Guangxi, Guizhou, Hubei, Hunan, Shaanxi, Sichuan, Yunnan [Bhutan, India, Myanmar (Burma), Nepal, Vietnam]. *Specimen: Meili Team 25314* (PYU, SABG). *Use(s):* medicinal, firewood, oil.

Euonymus sanguineus Loes.

Distribution: China. Gansu, Henan, Hubei, Hunan, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 24904* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Euonymus semenovii Regel & Herder

Distribution: China. Gansu, Hebei, Henan, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Kazakhtstan, Kyrgyzstan]. *Specimen: Meili Team 25279* (PYU, SABG). *Use(s):* medicinal, firewood.

Euonymus verrucosoides Loes.

Distribution: China. Gansu, Henan, Hubei, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Liu Lin 20* (SABG). *Use(s):* none documented.

Parnassia L.

Parnassia delavayi Franch.

Distribution: China. Gansu, Hubei, Shaanxi, Sichuan, Yunnan [Bhutan]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Parnassia longipetala Hand.-Mazz.

Distribution: China. SE Xizang (Tibet), NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Parnassia nubicola Wall. ex Royle

Distribution: China. SE Xizang (Tibet), NW Yunnan [Afghanistan, Bhutan, India, Kashmir, Nepal, Pakistan]. *Specimen: Fang Zhendong 1643* (SABG). *Use(s):* none documented.

Parnassia subscaposa C. Y. Wu ex T. C. Ku

Distribution: China. NW Yunnan. *Specimen: Meili Team 26293* (PYU, SABG). *Use(s):* none documented.

Parnassia venusta Z. P. Jien

Distribution: China. NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Parnassia viridiflora Batalin

Distribution: China. Qinghai, Shaanxi, Sichuan, Yunnan. *Specimen: Meili Team 25997* (PYU, SABG). *Use(s):* none documented.

Parnassia wightiana Wall. ex Wight & Arn.

Distribution: China. Guangdong, Guangxi, Guizhou, Hubei, Hunan, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, N India, Nepal, Sikkim, N Thailand]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Parnassia yunnanensis Franch.

Distribution: China. W Sichuan, NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Chenopodiaceae—see Amaranthaceae

Clusiaceae—see Hypericaceae

Colchicaceae

Disporum Salisb.

Disporum bodinieri (H. Lév. & Vaniot) F. T. Wang & T. Tang
Distribution: China. Guizhou, Hunan, Sichuan, Xizang (Tibet), Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Disporum megalanthum F. T. Wang & T. Tang
Distribution: China. Gansu, Hubei, Shaanxi, Sichuan, Yunnan. *Specimen: Wu Sugong et al. WB-201* (KUN). *Use(s):* food.

Combretaceae

Terminalia L.

Terminalia franchetii Gagnep.
Distribution: China. NW Guangxi, SW Sichuan, SE Xizang (Tibet), Yunnan [N Thailand]. *Specimen: Meili Team 26065* (PYU, SABG). *Use(s):* none documented.

Commelinaceae

Streptolirion Edgew.

Streptolirion volubile Edgew.
Distribution: China. Gansu, NW Guangxi, Guizhou, Hebei, W Henan, W Hubei, W Hunan, Liaoning, S Shaanxi, Shanxi, Sichuan, SE Xizang (Tibet), Yunnan, W Zhejiang [Bhutan, India, Japan, Korea, Laos, Myanmar (Burma), Sikkim, Thailand, Vietnam]. *Specimen: Wu Sugong et al. WB-183* (KUN). *Use(s):* none documented.

Convolvulaceae

Calystegia R. Br.

Calystegia hederacea Wall.
Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Yunnan, Zhejiang [Afghanistan, India, Japan, Korea, Malaysia, Mongolia, Myanmar (Burma), Nepal, Pakistan, Russia, Tajikistan; NE Africa, rarely introduced in North America]. *Specimen: Meili Team 27279B* (PYU, SABG). *Use(s):* medicinal.

Cuscuta L.

Cuscuta chinensis Lam.
Distribution: China. Widespread [Afghanistan, Indonesia, Japan, Kazakhstan, Korea, Mongolia, Russia, Sri Lanka; Africa, SW Asia, Australia]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Dinetus Buch.-Ham. ex Sweet

Dinetus racemosus (Roxb.) Buch.-Ham. ex Sweet
Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Indonesia, Laos, Myanmar (Burma), Nepal, Pakistan, the Philippines, Thailand, Vietnam]. *Specimen: Meili Team 26373* (PYU, SABG). *Use(s):* medicinal.

Coriariaceae

Coriaria L.

Coriaria nepalensis Wall.
Distribution: China. Gansu, Guangxi, Guizhou, Henan, Hong Kong, Hubei, Hunan, Jiangsu, Shaanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 24829* (PYU, SABG). *Use(s):* medicinal, dye.

Cornaceae

Cornus L.

Cornus capitata Wall.
Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Myanmar (Burma), Nepal]. *Specimen: Wu Sugong et al. WB-102* (KUN). *Use(s):* food, medicinal.

Cornus hemsleyi C. K. Schneid. & Wangerin
Distribution: China. Gansu, Guizhou, Hebei, Henan, Hubei, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Wu Sugong et al. WB-091* (KUN). *Use(s):* none documented.

Cornus macrophylla Wall.

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, Ningxia, Shaanxi, Shandong, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Afghanistan, Bhutan, India, Kashmir, Myanmar (Burma), Nepal, Pakistan]. *Specimen: Meili Team 25667* (PYU, SABG). *Use(s):* none documented.

Cornus oblonga Wall.

Distribution: China. Guizhou, Hubei, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Kashmir, Myanmar (Burma), Nepal, Pakistan, Sikkim, Sri Lanka, Thailand, Vietnam]. *Specimen: Meili Team 24905* (PYU, SABG). *Use(s):* medicinal.

Cornus schindleri Wangerin

Distribution: China. SE Gansu, Guizhou, Henan, W Hubei, S Shaanxi, Sichuan, Xizang (Tibet), N Yunnan. *Specimen: Meili Team 24836* (PYU, SABG). *Use(s):* firewood.

Crassulaceae

Rhodiola L.

Rhodiola alterna S. H. Fu

Distribution: China. NE Xizang (Tibet), Yunnan. *Specimen: Jan Salick et al. 9542* (MO, SABG). *Use(s):* medicinal.

Rhodiola atuntsuensis (Praeger) S. H. Fu

Distribution: China. W Sichuan, Xizang (Tibet), NW Yunnan [Myanmar (Burma)]. *Specimen: Liu Lin 13* (SABG). *Use(s):* medicinal.

Rhodiola bupleuroides (Wall. ex Hook. f. & Thomson) S. H. Fu

Distribution: China. W Sichuan, Xizang (Tibet), NW Yunnan [Bhutan, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 25953* (PYU, SABG). *Use(s):* medicinal.

Rhodiola chrysanthemifolia (H. Lév.) S. H. Fu

Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Meili Team 26765* (PYU, SABG). *Use(s):* medicinal.

Rhodiola coccinea (Royle) Boriss.

Distribution: China. Gansu, Qinghai, Sichuan, Xinjiang, Xizang (Tibet), NW Yunnan [Afghanistan, Bhutan, NW India, Kashmir, Nepal, Sikkim]. *Specimen: Meili Team 26560* (PYU, SABG). *Use(s):* medicinal.

Rhodiola crenulata (Hook. f. & Thomson) H. Ohba

Distribution: China. Qinghai, Sichuan, Xizang (Tibet), Yunnan [Bhutan, Nepal, Sikkim]. *Specimen: Bee Gunn 176* (MO, SABG). *Use(s):* medicinal.

Rhodiola discolor (Franch.) S. H. Fu

Distribution: China. W Sichuan, SE Xizang (Tibet), NW Yunnan [Nepal, Sikkim]. *Specimen: Meili Team 26488* (PYU, SABG). *Use(s):* none documented.

Rhodiola dumulosa (Franch.) S. H. Fu

Distribution: China. Gansu, Hebei, Hubei, Jilin, Nei Mongol, Qinghai, Shaanxi, Shanxi, Sichuan, Yunnan [Bhutan, Myanmar (Burma)]. *Specimen: Heidi Schmidt et al. 4058* (MO, SABG). *Use(s):* none documented.

Rhodiola fastigiata (Hook. f. & Thomson) S. H. Fu

Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Kashmir, Nepal, Sikkim]. *Specimen: Meili Team 25866* (PYU, SABG). *Use(s):* medicinal.

Rhodiola kirilowii (Regel) Maxim.

Distribution: China. Gansu, Hebei, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Kazakhstan, Myanmar (Burma)]. *Specimen: Meili Team 26527* (PYU, SABG). *Use(s):* medicinal.

Rhodiola macrocarpa (Praeger) S. H. Fu

Distribution: China. Gansu, Qinghai, Shaanxi, Sichuan, SE Xizang (Tibet), NW Yunnan [Myanmar (Burma)]. *Specimen: Meili Team 25793* (PYU, SABG). *Use(s):* none documented.

Rhodiola nobilis (Franch.) S. H. Fu

Distribution: China. NW Yunnan [Myanmar (Burma)]. *Specimen: Meili Team 26554* (PYU, SABG). *Use(s):* none documented.

Rhodiola ovatisepala (Raym.-Hamet) S. H. Fu

Distribution: China. S Xizang (Tibet), NW Yunnan [Bhutan, Myanmar (Burma), Nepal, Sikkim]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Rhodiola purpureoviridis (Praeger) S. H. Fu

Distribution: China. W Sichuan, S Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25485* (PYU, SABG). *Use(s):* none documented.

Rhodiola sacra (Prain ex Raym.-Hamet) S. H. Fu

Distribution: China. SE Qinghai, Xizang (Tibet), Yunnan [Nepal]. *Specimen: Meili Team 25469* (PYU, SABG). *Use(s):* none documented.

Rhodiola wallichiana (Hook.) S. H. Fu
Distribution: China. W Sichuan, SE Xizang (Tibet), W Yunnan [Bhutan, N India, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Heidi Schmidt et al. 4059* (MO, SABG). *Use(s):* medicinal.

Rhodiola yunnanensis (Franch.) S. H. Fu
Distribution: China. Gansu, Guizhou, Henan, Hubei, Shaanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26124* (PYU, SABG). *Use(s):* medicinal.

Sedum L.

Sedum beauverdii Raym.-Hamet
Distribution: China. W Sichuan, NW Yunnan. *Specimen: Meili Team 27926* (PYU, SABG). *Use(s):* none documented.

Sedum daigremontianum Raym.-Hamet
Distribution: China. S Gansu, C & W Sichuan, Yunnan. *Specimen: Meili Team 25958* (PYU, SABG). *Use(s):* none documented.

Sedum dugueyi Raym.-Hamet
Distribution: China. NW Sichuan, NW Yunnan. *Specimen: Meili Team 26685* (PYU, SABG). *Use(s):* none documented.

Sedum forrestii Raym.-Hamet
Distribution: China. NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Sedum hengduanense K. T. Fu
Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25231* (PYU, SABG). *Use(s):* none documented.

Sedum leucocarpum Franch.
Distribution: China. SW Sichuan, NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Sedum multicaule Wall. ex Lindl.
Distribution: China. Gansu, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Myanmar (Burma), Nepal, Pakistan, Sikkim]. *Specimen: Meili Team 26105* (PYU, SABG). *Use(s):* medicinal.

Sedum obtusipetalum Franch.
Distribution: China. SW Sichuan, NW Yunnan [Nepal]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Sedum oreades (Decne.) Raym.-Hamet
Distribution: China. SE Xizang (Tibet), NW Yunnan [Bhutan, India, Myanmar (Burma), N Pakistan, Sikkim]. *Specimen: Danica Anderson 100* (MO, SABG). *Use(s):* none documented.

Sedum platysepalum Franch.
Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Meili Team 26413* (PYU, SABG). *Use(s):* medicinal.

Sedum przewalskii Maxim.
Distribution: China. C Gansu, SE Qinghai, W Sichuan, E Xizang (Tibet), NW Yunnan [Nepal]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Sedum raymondii Frōd.
Distribution: China. NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Sedum sarmentosum Bunge
Distribution: China. Yunnan [Japan, Korea, N Thailand]. *Specimen: Meili Team 26717* (PYU, SABG). *Use(s):* medicinal.

Sedum stellariifolium Franch.
Distribution: China. Gansu, Guizhou, Hebei, Henan, Hubei, Hunan, Liaoning, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Yunnan. *Specimen: Meili Team 26407* (PYU, SABG). *Use(s):* medicinal.

Sedum susannae Raym.-Hamet
Distribution: China. W Sichuan, E Xizang (Tibet), Yunnan [Myanmar (Burma)]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Sedum trullipetalum Hook. f. & Thomson
Distribution: China. W Sichuan, NE & S Xizang (Tibet), NW Yunnan [Nepal, Sikkim]. *Specimen: Ruizi La Team 137* (MO, SABG). *Use(s):* none documented.

Sinocrassula A. Berger

Sinocrassula ambigua (Praeger) A. Berger
Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Meili Team 25276* (PYU, SABG). *Use(s):* none documented.

Sinocrassula indica (Decne.) A. Berger
Distribution: China. S Gansu, Guangxi, Guizhou, Henan, Hubei, Hunan, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Pakistan, Sikkim]. *Specimen: Meili Team 27282* (PYU, SABG). *Use(s):* medicinal.

Sinocrassula techinensis (S. H. Fu) S. H. Fu
Distribution: China. NW Yunnan. *Specimen: Meili Team s.n.* (PYU, SABG). *Use(s):* none documented.

Cucurbitaceae

Herpetospermum Wall. ex Hook. f.

Herpetospermum pedunculosum (Ser.) C. B. Clarke
Distribution: China. Xizang (Tibet), Yunnan [India, Nepal]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Thladiantha Bunge

Thladiantha villosula Cogn.
Distribution: China. Gansu, Guizhou, S Henan, W Hubei, S Shaanxi, Sichuan. *Specimen: Meili Team 25706* (PYU, SABG). *Use(s):* medicinal.

Cyperaceae

Carex L.

Carex atrata L.
Distribution: China. Jilin, Qinghai, Yunnan [Japan, Korea, Russia; Europe]. *Specimen: Meili Team 25515* (PYU, SABG). *Use(s):* forage and/or fodder.

Carex doniana Spreng.
Distribution: China. Fujian, Guangdong, Guangxi, Hubei, Jiangsu, Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang [Japan, Korea, the Philippines, Nepal]. *Specimen: Meili Team 27386* (PYU, SABG). *Use(s):* forage and/or fodder.

Carex gentilis Franch.
Distribution: China. Jiangxi, Sichuan, Yunnan. *Specimen: Meili Team 26662* (PYU, SABG). *Use(s):* forage and/or fodder.

Carex kansuensis Nelmes
Distribution: China. Gansu, Qinghai, Shaanxi, W Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25365* (PYU, SABG). *Use(s):* none documented.

Carex laeta Boott
Distribution: China. W & SW Sichuan, E Xizang (Tibet), Yunnan [Sikkim, Nepal]. *Specimen: Meili Team 26830* (PYU, SABG). *Use(s):* none documented.

Carex lanceolata Boott
Distribution: China. Anhui, Gansu, Guizhou, Hebei, Henan, Heilongjiang, Jiangxi, Jiangsu, Jilin, Liaoning, Nei Mongol, Shaanxi, Shanxi, Shandong, Sichuan, Yunnan, Zhejiang [Japan, Korea, Mongolia, Russia (Far East, E Siberia)]. *Specimen: George Yatskievych 04-115* (KUN, MO). *Use(s):* forage and/or fodder.

Carex obscura Nees
Distribution: China. W Sichuan, SE Xizang (Tibet), NW Yunnan [Kashmir, Sikkim]. *Specimen: Meili Team 27936* (PYU, SABG). *Use(s):* none documented.

Carex parva Nees
Distribution: China. Gansu, Qinghai, Shaanxi, Xizang (Tibet), Yunnan [Nepal; C Asia]. *Specimen: Meili Team 27498* (PYU, SABG). *Use(s):* none documented.

Carex rubrobrunnea C. B. Clarke
Distribution: China. Anhui, Gansu, Guangdong, Guangxi, Hubei, Jiangsu, Shaanxi, Xizang (Tibet), Yunnan, Zhejiang [India (Assam)]. *Specimen: Meili Team 27441* (PYU, SABG). *Use(s):* none documented.

Carex schneideri Nelmes
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Ruizi La Team 101* (MO, SABG). *Use(s):* forage and/or fodder.

Carex scolopendriformis F. T. Wang & Tang ex P. C. Li
Distribution: China. SW Sichuan, NW Yunnan. *Specimen: George Yatskievych 04-138* (KUN, MO). *Use(s):* forage and/or fodder.

Carex serreana Hand.-Mazz.
Distribution: China. Gansu, Hebei, Qinghai, Shanxi, Yunnan. *Specimen: Meili Team 26203* (PYU, SABG). *Use(s):* none documented.

Carex setosa Boott
Distribution: China. Gansu, Guangxi, Guizhou, Qinghai, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Kashmir, Nepal]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Eleocharis R. Br.

Eleocharis yokoscensis (Franch. & Sav.) T. Tang & F. T. Wang

Distribution: China. Yunnan [India, Japan, Korea, Myanmar (Burma), Russia, Vietnam]. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn & Yin Xuezhen 346* (MO, SABG). *Use(s):* forage and/or fodder.

Isolepis R. Br.

Isolepis setacea (L.) R. Br.

Distribution: China. Yunnan [Eurasia, Africa, Oceania]. *Specimen: Meili Team 26632* (PYU, SABG). *Use(s):* forage and/or fodder.

Kobresia Willd.

Kobresia cuneata Kük.

Distribution: China. Gansu, Sichuan, Xizang (Tibet), Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Kobresia graminifolia C. B. Clarke

Distribution: China. Gansu, Qinghai, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Nepal]. *Specimen: Meili Team 26584* (PYU, SABG). *Use(s):* none documented.

Kobresia pygmaea (C. B. Clarke) C. B. Clarke

Distribution: China. Gansu, Hebei, Nei Mongol, Qinghai, Shanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India (Himachal Pradesh, Uttarakhand), Kashmir, Myanmar (Burma), Nepal, Pakistan, Sikkim]. *Specimen: Meili Team 25900* (PYU, SABG). *Use(s):* none documented.

Kobresia royleana (Nees) Boeckeler

Distribution: China. Gansu, Qinghai, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Afghanistan, India, Kashmir, Krygyzstan, Nepal, Pakistan, Tajikistan]. *Specimen: Jessica Woo & Ruth Sherman 421* (MO, SABG). *Use(s):* forage and/or fodder.

Kobresia setschwanensis Hand.-Mazz.

Distribution: China. Gansu, Qinghai, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26639* (PYU, SABG). *Use(s):* none documented.

Pycreus P. Beauv

Pycreus flavidus (Retz.) T. Koyama

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Ningxia, Nei Mongol, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, Cambodia, India, Japan, Kashmir, Korea, Laos, Nepal, Pakistan, the Philippines, Russia, Sri Lanka, Thailand, Vietnam; N Africa, SW Asia, Australia, S Europe, Madagascar, Americas]. *Specimen: Meili Team 26634* (PYU, SABG). *Use(s):* forage and/or fodder.

Diapensiaceae

Diapensia L.

Diapensia himalaica Hook. f. & Thomson

Distribution: China. SE Xizang (Tibet), NW Yunnan [Bhutan, N Myanmar (Burma), Sikkim]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Diapensia purpurea Diels

Distribution: China. W Sichuan, SE Xizang (Tibet), NW Yunnan [N Myanmar (Burma)]. *Specimen: Liu Lin 2* (SABG). *Use(s):* none documented.

Dioscoreaceae

Dioscorea L.

Dioscorea althaeoides R. Knuth

Distribution: China. Guizhou, Sichuan, E Xizang (Tibet), Yunnan [Thailand]. *Specimen: Meili Team 24877B* (PYU, SABG). *Use(s):* medicinal.

Dioscorea deltoidea Wall. ex Griseb.

Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Myanmar (Burma), Nepal, Sikkim, Thailand, Vietnam]. *Specimen: Meili Team 25260* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Dioscorea melanophyma Prain & Burkill

Diapensia purpurea. Photograph by Bob Moseley.

Distribution: China. Guizhou, Sichuan, E Xizang (Tibet), Yunnan [Nepal]. *Specimen: Meili Team 28366* (PYU, SABG). *Use(s):* medicinal.

Dioscorea nitens Prain & Burkill

Distribution: China. Yunnan. *Specimen: Jessica Woo & Ruth Sherman 497* (MO, SABG). *Use(s):* medicinal.

Dipsacaceae—see Caprifoliaceae

Droseraceae

Drosera L.

Drosera peltata Sm. ex Willd.

Distribution: China. Anhui, Gansu, Guangdong, Guangxi, W Guizhou, Hubei, Hunan, Jiangxi, SW Sichuan, Taiwan, S Xizang (Tibet), Yunnan, Zhejiang [E & SE Asia, Australia]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal, pesticide.

Ebenaceae

Diospyros L.

Diospyros lotus L.

Distribution: China. Anhui, Gansu, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Shaanxi, Shandong, Shanxi, Sichuan, Xizang (Tibet), Yunnan, Zhejiang [SW Asia, S Europe; naturalized in countries around the Mediterranean]. *Specimen: Fang Zhendong 2003-11* (SABG). *Use(s):* food.

Elaeagnaceae

Elaeagnus L.

Elaeagnus delavayi Lecomte

Distribution: China. Yunnan. *Specimen:* Report based on Fang Zhendong, pers. obs. *Use(s):* food, medicinal.

Elaeagnus pungens Thunb.

Distribution: China. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Yunnan, Zhejiang. *Specimen: Meili Team 25187* (PYU, SABG). *Use(s):* medicinal.

Hippophae L.

Hippophae rhamnoides L.

Distribution: China. Gansu, Hebei, Nei Mongol, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, N & SE Xizang (Tibet), Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* food, medicinal, oil.

Elatinaceae

Elatine L.

Elatine triandra Schkuhr

Distribution: China. Guangdong, Heilongjiang, Jilin, Taiwan, Yunnan. *Specimen: Meili Team 26924* (PYU, SABG). *Use(s):* none documented.

Ericaceae

Cassiope D. Don

Cassiope palpebrata W. W. Sm.

Distribution: China. NW Yunnan [Myanmar (Burma)]. *Specimen: Fang Zhendong 1625* (SABG). *Use(s):* none documented.

Cassiope pectinata Stapf

Distribution: China. SW Sichuan, E Xizang (Tibet), NW Yunnan [Myanmar (Burma)]. *Specimen: Meili Team 25107* (PYU, SABG). *Use(s):* none documented.

Cassiope selaginoides Hook. f. & Thomson

Distribution: China. W Sichuan, SE Xizang (Tibet), NE Yunnan [Bhutan, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Fang Zhendong 1646* (SABG). *Use(s):* medicinal.

Chimaphila Pursh

Chimaphila japonica Miq.

Distribution: China. Anhui, Guizhou, Hubei, Jilin, Liaoning, Shaanxi, Shanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Bhutan, Japan, Korea, Russia]. *Specimen: Fang Zhendong 1569* (SABG). *Use(s):* none documented.

Diplarche Hook. f. & Thomson

Diplarche multiflora Hook. f. & Thomson

Distribution: China. SE Xizang (Tibet), NW Yunnan [Myanmar (Burma), Sikkim]. *Specimen: Fang Zhendong 254* (SABG). *Use(s):* medicinal.

Diplarche pauciflora Hook. f. & Thomson

Distribution: China. NW Sichuan, NW Yunnan [Sikkim]. *Specimen: Fang Zhendong 247* (SABG). *Use(s):* none documented.

Enkianthus Lour.

Enkianthus deflexus (Griff.) C. K. Schneid.
Distribution: China. S Gansu, Guizhou, Guangdong, Hubei, Sichuan, Xizang (Tibet), Yunnan [Bhutan, NE India, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 25046* (PYU, SABG). *Use(s):* medicinal.

Gaultheria L.

Gaultheria hookeri C. B. Clarke
Distribution: China. SW Guizhou, S Sichuan, SE Xizang (Tibet), N & SE Yunnan [Bhutan, India, Myanmar (Burma), Sikkim]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Gaultheria hypochlora Airy Shaw
Distribution: China. W Sichuan, NW & SE Yunnan [Bhutan, NE India, Myanmar (Burma)]. *Specimen: Meili Team 26931* (PYU, SABG). *Use(s):* none documented.

Gaultheria praticola C. Y. Wu & T. Z. Hsu
Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Fang Zhendong 1571* (SABG). *Use(s):* none documented.

Gaultheria sinensis J. Anthony
Distribution: China. NW Sichuan, SE Xizang (Tibet), C & NW Yunnan [Bhutan, NE India, N Myanmar (Burma), Sikkim]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Gaultheria suborbicularis W. W. Sm.
Distribution: China. NW Yunnan. *Specimen: Meili Team 27987* (PYU, SABG). *Use(s):* none documented.

Gaultheria trichophylla Royle
Distribution: China. C & W Sichuan, S Xizang (Tibet), NW Yunnan [Bhutan, NE India, Kashmir, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 27985* (PYU, SABG). *Use(s):* none documented.

Leucothoe D. Don

Leucothoe griffithiana C. B. Clarke
Distribution: China. Guizhou, SE Xizang (Tibet), NW Yunnan [Bhutan, Myanmar (Burma)]. *Specimen: Jan Salick & Robert Moseley 9385* (MO, SABG). *Use(s):* firewood.

Lyonia Nutt

Lyonia ovalifolia (Wall.) Drude
Distribution: China. Anhui, Fujian, S Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Bangladesh, Bhutan, Cambodia, India, Japan, Laos, Malaysia, Myanmar (Burma), Nepal, Pakistan, Sikkim, Thailand, Vietnam]. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn & Peiji 212* (MO, SABG). *Use(s):* firewood, fertilizer.

Lyonia villosa (Wall. ex C. B. Clarke) Hand.-Mazz.
Distribution: China. Guizhou, Sichuan, SE Xizang (Tibet), Yunnan [Bhutan, NE India, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 25720* (PYU, SABG). *Use(s):* medicinal, handcrafts, firewood.

Moneses Salisb. ex A. Gray

Moneses uniflora (L.) A. Gray
Distribution: China. Gansu, Heilongjiang, Jilin, Shanxi, N Sichuan, Taiwan, Xinjiang, NW Yunnan [Japan, N Korea, Mongolia, Russia; Europe, North America]. *Specimen: Fang Zhendong 1584* (SABG). *Use(s):* none documented.

Monotropa L.

Monotropa hypopitys L.
Distribution: China. Anhui, Fujian, Gansu, W Hubei, Hunan, Jilin, Jiangxi, Liaoning, Qinghai, Shaanxi, Shanxi, N Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, India, Japan, Kashmir, Korea, Mongolia, Myanmar (Burma), Nepal, Pakistan, Russia, Sikkim, Thailand; SW Asia]. *Specimen: Jessica Woo & Ruth Sherman 525* (MO, SABG). *Use(s):* none documented.

Pyrola L.

Pyrola atropurpurea Franch.
Distribution: China. Gansu, Qinghai, Shanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25742* (PYU, SABG); *Kurt Hoffmeister, Deng Zhiwei & Anthony Amend 4* (MO, SABG). *Use(s):* medicinal.

Pyrola calliantha Andres
Distribution: China. Anhui, Fujian, Gansu, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Qinghai, Shandong, Shanxi,

Sichuan, Xizang (Tibet), Yunnan, Zhejiang. *Specimen: Meili Team 25345* (PYU, SABG). *Use(s):* medicinal.

Pyrola forrestiana Andres
Distribution: China. Hubei, Hunan, Sichuan, Yunnan. *Specimen: Fang Zhendong 1565* (SABG). *Use(s):* medicinal.

Pyrola sororia Andres
Distribution: China. Xizang (Tibet), Yunnan. *Specimen: Meili Team 24950* (PYU, SABG). *Use(s):* none documented.

Rhododendron L.

Rhododendron agganiphum Balf. f. & Kingdon-Ward
Distribution: China. S Qinghai, W Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Fang Zhendong 643* (SABG). *Use(s):* none documented

Rhododendron anthosphaerum Diels
Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan [NE Myanmar (Burma)]. *Specimen: Meili Team 27257* (PYU, SABG). *Use(s):* none documented.

Rhododendron augustinii Hemsl.
Distribution: China. Gansu, Hubei, Shaanxi, Sichuan, Yunnan. *Specimen: Meili Team 24824* (PYU, SABG). *Use(s):* firewood.

Rhododendron beesianum Diels
Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan [NE Myanmar (Burma)]. *Specimen: Meili Team 24921* (PYU, SABG). *Use(s):* none documented.

Rhododendron brachyanthum Franch.
Distribution: China. SE Xizang (Tibet), C & W Yunnan [NE Myanmar (Burma)]. *Specimen: Meili Team 27442* (PYU, SABG). *Use(s):* none documented.

Rhododendron callimorphum Balf. f. & W. W. Sm.
Distribution: China. NW Yunnan [NE Myanmar (Burma)]. *Specimen: Meili Team 27440* (PYU, SABG). *Use(s):* none documented.

Rhododendron calostrotum Balf. f. & Kingdon-Ward
Distribution: China. Xizang (Tibet), Yunnan [India, Myanmar (Burma)]. *Specimen: George Yatskievych 04-068* (KUN, MO). *Use(s):* medicinal.

Rhododendron campylogynum Franch.
Distribution: China. S Xizang (Tibet), C & W Yunnan [NE Myanmar (Burma), NE India]. *Specimen: Fang Zhendong 240* (PYU, SABG). *Use(s):* none documented.

Rhododendron cephalanthum Franch.
Distribution: China. S Qinghai, NW Sichuan, S Xizang (Tibet), C & N Yunnan [NE India, Myanmar (Burma)]. *Specimen: Meili Team 25008* (PYU, SABG). *Use(s):* none documented.

Rhododendron complexum Balf. f. & W. W. Sm.
Distribution: China. Sichuan, Yunnan. *Specimen: Meilishi Team 24* (PYU, SABG). *Use(s):* none documented.

Rhododendron coriaceum Franch.
Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 27358* (PYU, SABG). *Use(s):* firewood.

Rhododendron decorum Franch.
Distribution: China. W Guizhou, SW Sichuan, SE Xizang (Tibet), Yunnan [Myanmar (Burma)]. *Specimen: Fang Zhendong 234* (PYU, SABG). *Use(s):* food, medicinal, religious, firewood.

Rhododendron edgeworthii Hook. f.
Distribution: China. SW Sichuan, SE Xizang (Tibet), C & NW Yunnan [Bhutan, N India, Myanmar (Burma), Sikkim]. *Specimen: Meili Team s.n.* (PYU, SABG). *Use(s):* none documented.

Rhododendron ×erythrocalyx Balf. f. & Forrest
Distribution: China. E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25012* (PYU, SABG). *Use(s):* none documented.

Rhododendron fastigiatum Franch.
Distribution: China. C & NW Yunnan. *Specimen: Jan Salick et al. 9535* (MO, SABG). *Use(s):* medicinal, firewood.

Rhododendron fulvum Balf. f. & W. W. Sm.
Distribution: China. SW Sichuan, SE Xizang (Tibet), W Yunnan [NE Myanmar (Burma)]. *Specimen: Meili Team 27256* (PYU, SABG). *Use(s):* firewood.

Rhododendron heliolepis Franch.
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Myanmar (Burma)]. *Specimen: Fang Zhendong 263* (PYU, SABG). *Use(s):* religious, firewood.

Rhododendron lukiangense Franch.
Distribution: China. SW Sichuan, SE Xizang

(Tibet), NW Yunnan. *Specimen: Fang Zhendong 1417* (PYU, SABG). *Use(s):* none documented.

Rhododendron mekongense Franch.
Distribution: China. S Xizang (Tibet), NW Yunnan [India, NE Myanmar (Burma), Nepal]. *Specimen: Meili Team 24937* (PYU, SABG). *Use(s):* none documented.

Rhododendron nakotiltum Balf. f. & Forrest
Distribution: China. NW Yunnan. *Specimen: Meili Team 25617* (PYU, SABG). *Use(s):* none documented.

Rhododendron nivale Hook. f.
Distribution: China. S Qinghai, W Sichuan, E & S Xizang (Tibet), C & W Yunnan [Bhutan, Nepal, Sikkim]. *Specimen: Meili Team 25831* (PYU, SABG). *Use(s):* none documented.

Rhododendron oreotrephes W. W. Sm.
Distribution: China. SW Sichuan, SE Xizang (Tibet), N Yunnan [Myanmar (Burma)]. *Specimen: Meili Team 24930* (PYU, SABG). *Use(s):* firewood.

Rhododendron phaeochrysum Balf. f. & W. W. Sm.
Distribution: China. W Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25925* (PYU, SABG). *Use(s):* firewood, poisonous.

Rhododendron praestans Balf. f. & W. W. Sm.
Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 27963* (PYU, SABG). *Use(s):* none documented

Rhododendron primuliflorum Bureau & Franch
Distribution: China. S Gansu, W Sichuan, S Xizang (Tibet), N Yunnan. *Specimen: Meili Team 25878* (PYU, SABG). *Use(s):* medicinal.

Rhododendron rubiginosum Franch.
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Myanmar (Burma)]. *Specimen: Meili Team 25356* (PYU, SABG). *Use(s):* firewood.

Rhododendron rupicola W. W. Sm
Distribution: China. W Sichuan, SE Xizang (Tibet), C & N Yunnan [NE Myanmar (Burma)]. *Specimen: Fang Zhendong 261* (SABG). *Use(s):* none documented

Rhododendron saluenense Franch
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Myanmar (Burma)]. *Specimen: Fang Zhendong 242* (SABG). *Use(s):* none documented

Rhododendron sanguineum Franch.
Distribution: China. SE Xizang (Tibet), NW Yunnan [NE Myanmar (Burma)]. *Specimen: Fang Zhendong 259* (PYU, SABG). *Use(s):* none documented.

Rhododendron selense Franch.
Distribution: China. SW Sichuan, E Xizang (Tibet), W Yunnan. *Specimen: Meili Team 24935* (PYU, SABG). *Use(s):* none documented.

Rhododendron sphaeroblastum Balf. f. & Forrest
Distribution: China. SW Sichuan, N Yunnan. *Specimen: Meili Team 25617* (PYU, SABG). *Use(s):* none documented.

Rhododendron rubiginosum. Photograph by Fang Zhendong.

Rhododendron saluenense. Photograph by Fang Zhendong.

Rhododendron tanastylum Balf. f. & Kingdon-Ward
Distribution: China. E Xizang (Tibet), W Yunnan [NE India, NE Myanmar (Burma)]. *Specimen: Meili Team 25173* (PYU, SABG). *Use(s):* firewood.

Rhododendron tapetiforme Balf. f. & Kingdon-Ward
Distribution: China. SE Xizang (Tibet), NW Yunnan [NE Myanmar (Burma)]. *Specimen: Meili Team 25831* (PYU, SABG). *Use(s):* none documented.

Rhododendron traillianum Forrest & W. W. Sm.
Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Fang Zhendong 615* (SABG). *Use(s):* firewood.

Rhododendron trichocladum Franch.
Distribution: China. Xizang (Tibet), Yunnan [N Myanmar (Burma)]. *Specimen: George Yatskievych 04-056* (KUN, MO). *Use(s):* none documented.

Rhododendron uvariifolium Diels
Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25891* (PYU, SABG). *Use(s):* firewood.

Rhododendron vernicosum Franch.
Distribution: China. W Sichuan, SE Xizang (Tibet), W Yunnan. *Specimen: Fang Zhendong 613* (SABG). *Use(s):* food, medicinal.

Rhododendron wardii W. W. Sm.
Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25285* (PYU, SABG). *Use(s):* none documented.

Rhododendron yungningense Balf. f.
Distribution: China. SW Sichuan, N Yunnan. *Specimen: Meili Team 25612* (PYU, SABG). *Use(s):* none documented.

Rhododendron yunnanense Franch.
Distribution: China. W Guizhou, S Shaanxi, W Sichuan, Xizang (Tibet), Yunnan [Myanmar (Burma)]. *Specimen: Meili Team 25412* (PYU, SABG). *Use(s):* medicinal, firewood.

Vaccinium L.

Vaccinium fragile Franch.
Distribution: China. Guizhou, Sichuan, SE Xizang (Tibet), Yunnan. *Specimen: Meili Team 25748* (PYU, SABG). *Use(s):* none documented.

Euphorbiaceae

Acalypha L.

Acalypha supera Forsskal
Distribution: China. Anhui, Fujian, S Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, S Shaanxi, Sichuan, Taiwan, Yunnan [Bhutan, India, Indonesia, Malaysia, Nepal, Sri Lanka, Vietnam; tropical Africa]. *Specimen: Meili Team 26374* (PYU, SABG). *Use(s):* medicinal.

Euphorbia L.

Euphorbia humifusa Willd.
Distribution: China. Throughout except Hainan [widely distributed in temperate regions of Africa, Asia, Europe]. *Specimen: Wu Sugong et al. WB-009* (KUN). *Use(s):* medicinal.

Euphorbia lathyris L.
Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang [N Africa, North America, Asia, Europe]. *Specimen: Zhang Chuanling 3* (KUN). *Use(s):* none documented.

Euphorbia peplus L.
Distribution: China. Fujian, Guangxi, Hong Kong, Taiwan, Yunnan [N Africa, Americas, S Europe, Pacific Islands]. *Specimen: Jessica Woo & Ruth Sherman 429* (MO, SABG). *Use(s):* medicinal.

Euphorbia stracheyi Boiss.
Distribution: China. S Gansu, S Qinghai, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal]. *Specimen: Meili Team 25864* (PYU, SABG). *Use(s):* medicinal.

Euphorbia wallichii Hook. f.
Distribution: China. S Qinghai, Sichuan, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, India (Sikkim), Kashmir, Nepal]. *Specimen: Meili Team 24723* (PYU, SABG). *Use(s):* none documented.

Excoecaria L.

Excoecaria acerifolia Didr.
Distribution: China. Gansu, Guizhou, Hubei, Hunan, Sichuan, Yunnan [India, Nepal]. *Specimen: Meili Team 26628* (PYU, SABG). *Use(s):* medicinal, fertilizer, pesticide.

Flueggea Willd.—see Phyllanthaceae

Leptopus Decne.—see Phyllanthaceae

Fabaceae

Amphicarpaea Elliott ex Nutt.

Amphicarpaea ferruginea Benth. (syn. *Amphicarpaea rufescens* (Franch.) Y. T. Wei & S. K. Lee)
Distribution: China. Sichuan, Yunnan. *Specimen: Kurt Hoffmeister, Deng Zhiwei & Anthony Amend 78B* (MO, SABG). *Use(s):* none documented.

Astragalus L.

Astragalus acaulis Baker
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, Sikkim]. *Specimen: Jessica Woo & Ruth Sherman 425* (MO, SABG). *Use(s):* medicinal.

Astragalus craibianus N. D. Simpson
Distribution: China. Sichuan, Yunnan. *Specimen: Meili Team 25474* (PYU, SABG). *Use(s):* none documented.

Astragalus degensis Ulbr.
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Danica Anderson, Jan Salick & Peiji 159* (MO, SABG). *Use(s):* forage and/or fodder, veterinary.

Astragalus ernestii H. F. Comber
Distribution: China. Gansu, Qinghai, Sichuan, Xizang (Tibet), Yunnan [Bhutan, Sikkim]. *Specimen: Jan Salick et al. 9577* (MO, SABG). *Use(s):* medicinal.

Astragalus polycladus Bureau & Franch.
Distribution: China. Gansu, Qinghai, Sichuan, Xinjiang, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26892* (PYU, SABG). *Use(s):* none documented.

Astragalus skythropos Bunge ex Maxim.
Distribution: China. Gansu, Qinghai, Sichuan, Xinjiang, Yunnan. *Specimen: Meili Team 25957* (PYU, SABG). *Use(s):* none documented.

Astragalus yunnanensis Franch.
Distribution: China. Gansu, Henan, Qinghai, Shandong, Sichuan, Xizang (Tibet), Yunnan [India, Nepal]. *Specimen: Fang Zhendong 1725* (SABG). *Use(s):* none documented.

Bauhinia L.

Bauhinia brachycarpa Wall. ex Benth.
Distribution: China. Chongqing, Gansu, Guangxi, Guizhou, Hubei, Sichuan, Xizang (Tibet), Yunnan [Laos, Myanmar (Burma), Thailand]. *Specimen: Meili Team 26469 (PYU, SABG); Wu Sugong et al. WB-022* (KUN). *Use(s):* medicinal, forage and/or fodder.

Campylotropis Bunge

Campylotropis polyantha (Franch.) Schindl.
Distribution: China. Guizhou, Sichuan, E Xizang (Tibet), Yunnan. *Specimen: Meili Team 27234* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Caragana Fabr.

Caragana bicolor Kom.
Distribution: China. W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25424* (PYU, SABG). *Use(s):* medicinal.

Caragana franchetiana Kom.
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meilishi Team 276* (PYU, SABG). *Use(s):* none documented.

Chesneya Lindl. ex Endl.

Chesneya nubigena (D. Don) Ali
Distribution: China. Xizang (Tibet), Yunnan [Bhutan, India, Nepal]. *Specimen: Meili Team 24750* (PYU, SABG). *Use(s):* none documented.

Chesneya polystichoides (Hand.-Mazz.) Ali
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25486* (PYU, SABG). *Use(s):* none documented.

Desmodium Desv.

Desmodium elegans DC.
Distribution: China. NW Guizhou, SW Shaanxi, Sichuan, Xizang (Tibet), NW Yunnan [Afghanistan, Bhutan, NE & SW India, Kashmir, Nepal, Pakistan]. *Specimen: Meili Team 25069* (PYU, SABG). *Use(s):* forage and/or fodder.

Desmodium yunnanense Franch.
Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Meili Team 27873* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Glycine Willd.

Glycine max (L.) Merr.
Distribution: China. Cultivated throughout

[cultivated worldwide]. *Specimen: Jan Salick 9721* (MO, SABG). *Use(s):* food.

Hedysarum L.

Hedysarum limitaneum Hand.-Mazz.

Distribution: China. Qinghai, SW Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Heidi Schmidt et al. 4083* (MO, SABG). *Use(s):* none documented.

Hedysarum sikkimense Benth. ex Baker

Distribution: China. S Gansu, S Qinghai, W Sichuan, E Xizang (Tibet), NW Yunnan [Bhutan, E Nepal, Sikkim]. *Specimen: Meili Team 25354* (PYU, SABG). *Use(s):* none documented.

Indigofera L.

Indigofera bungeana Walpers

Distribution: China. Anhui, Gansu, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Liaoning, Nei Mongol, Shaanxi, Shanxi, Sichuan, E Xizang (Tibet), Yunnan, Zhejiang [Korea]. *Specimen: Meili Team 27243* (PYU, SABG). *Use(s):* medicinal.

Indigofera calcicola Craib

Distribution: China. Yunnan. *Specimen: Wayne Law, Yang Yongping, Anthony Amend, Peng Shengjing & Sun Hongyan 111* (MO, SABG). *Use(s):* none documented.

Indigofera hancockii Craib (syn. *Indigofera forrestii* Craib)

Distribution: China. Yunnan. *Specimen: George Yatskievych 04-108* (KUN, MO). *Use(s):* none documented.

Indigofera howellii Craib & W. W. Smith

Distribution: China. SW Sichuan, W Yunnan. *Specimen: Meili Team 27555* (PYU, SABG). *Use(s):* forage and/or fodder.

Indigofera lenticellata Craib

Distribution: China. W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Wu Sugong et al. WB-002* (KUN). *Use(s):* forage and/or fodder, fertilizer.

Indigofera mairei Pamp. (syn. *Indigofera monbeigii* Craib)

Distribution: China. S Gansu, Guizhou, N & W Sichuan, SE Xizang (Tibet), N Yunnan. *Specimen: Jessica Woo & Ruth Sherman 472* (MO, SABG). *Use(s):* forage and/or fodder.

Indigofera reticulata Franch.

Distribution: China. Guizhou, SW Sichuan, Xizang (Tibet), Yunnan [Thailand]. *Specimen: Meili Team 27874* (PYU, SABG). *Use(s):* none documented.

Indigofera szechuensis Craib

Distribution: China. W Gansu, W Sichuan, Xizang (Tibet), NW Yunnan. *Specimen: Wu Sugong et al. WB-184* (KUN). *Use(s):* forage and/or fodder.

Indigofera wilsonii Craib

Distribution: China. W Sichuan, Yunnan. *Specimen: Jessica Woo 407* (MO, SABG). *Use(s):* forage and/or fodder, construction.

Lathyrus L.

Lathyrus palustris L.

Distribution: China. Gansu, Hebei, Heilongjiang, Hubei, Jiangsu, Jilin, Liaoning, Nei Mongol, Qinghai, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang [Japan, Korea, Mongolia, Russia; Europe, North America]. *Specimen: Meili Team 25403* (PYU, SABG). *Use(s):* none documented.

Lens Mill.

Lens culinaris Medik.

Distribution: China. Cultivated in Gansu, Hebei, Henan, Jiangsu, Nei Mongol, Shaanxi, Shanxi, Sichuan, Yunnan [cultivated worldwide]. *Specimen: Wu Sugong et al. WB-026* (KUN). *Use(s):* food.

Lespedeza Michx.

Lespedeza fasciculiflora Franch.

Distribution: China. W Sichuan, Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25256* (PYU, SABG). *Use(s):* none documented.

Lotus L.

Lotus corniculatus L.

Distribution: Guizhou, Hubei, Hunan, Sichuan, Tianjin, Xizang (Tibet), Yunnan [cultivated and naturalized worldwide]. *Specimen: Jessica Woo & Ruth Sherman 435* (MO, SABG). *Use(s):* medicinal.

Medicago L.

Medicago edgeworthii Sirj.

Distribution: China. Qinghai, Sichuan, Xizang

(Tibet), Yunnan [Afghanistan, India, Pakistan]. *Specimen: Danica Anderson 40* (MO, SABG). *Use(s):* forage and/or fodder.

Medicago lupulina L.

Distribution: China. Cultivated and naturalized throughout [cultivated and naturalized in temperate regions worldwide]. *Specimen: Meili Team 27281* (PYU, SABG). *Use(s):* forage and/or fodder.

Medicago sativa L.

Distribution: China. Cultivated and naturalized throughout [cultivated and naturalized in temperate regions worldwide]. *Specimen: Meili Team 26884* (PYU, SABG). *Use(s):* forage and/or fodder.

Oxytropis DC.

Oxytropis melanocalyx Bunge

Distribution: China. Gansu, Nei Mongol, Qinghai, Shaanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Oxytropis yunnanensis Franch.

Distribution: China. Gansu, Qinghai, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Jan Salick et al. 9583* (MO, SABG). *Use(s):* forage and/or fodder.

Phyllolobium Fisch.

Phyllolobium balfourianum (N. D. Simpson) M. L. Zhang & Podlech

Distribution: China. Gansu, Qinghai, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26144* (PYU, SABG). *Use(s):* medicinal.

Pisum L.

Pisum sativum L.

Distribution: cultivated worldwide. Report based on Fang Zhendong, pers. obs. *Use(s):* food.

Rhynchosia Lour.

Rhynchosia himalensis Benth. ex Baker

Distribution: China. Sichuan, Xizang (Tibet), Yunnan [India, Myanmar (Burma), Nepal, Pakistan]. *Specimen: George Yatskievych 04-174* (KUN, MO). *Use(s):* medicinal, forage and/or fodder, fertilizer.

Sophora L.

Sophora davidii (Franch.) Skeels

Distribution: China. Gansu, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Shaanxi, Sichuan, Xizang (Tibet), Yunnan, Zhejiang. *Specimen: George Yatskievych 04-109* (KUN, MO). *Use(s):* medicinal, forage and/or fodder, construction.

Thermopsis R. Br.

Thermopsis smithiana E. Peter

Distribution: China. W Sichuan, Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 24762* (PYU, SABG). *Use(s):* none documented.

Tibetia (Ali) H. B. Cui

Tibetia yunnanensis (Franch.) H. P. Tsui

Distribution: China. Sichuan, SE Xizang (Tibet), Yunnan. *Specimen: Meili Team 25696* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Vicia L.

Vicia bungei Ohwi

Distribution: China. Anhui, Gansu, Hebei, Henan, Jiangsu, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xizang (Tibet), Yunnan [Korea]. *Specimen: Meili Team 27278* (PYU, SABG). *Use(s):* none documented.

Vicia sativa L. (syn. *Vicia angustifolia* L.)

Distribution: China. Cultivated and naturalized throughout [worldwide]. *Specimen: Meili Team 25099* (PYU, SABG). *Use(s):* forage and/or fodder.

Vicia villosa Roth

Distribution: China. Gansu, Guangdong, Guizhou, Hebei, Hunan, Jiangsu, Nei Mongol, Shandong, Taiwan, Xinjinag, Yunnan, Zhejiang [cultivated and adventive worldwide]. *Specimen: George Yatskievych 04-193* (KUN, MO). *Use(s):* none documented.

Fagaceae

Cyclobalanopsis Oerst.

Cyclobalanopsis oxyodon (Miq.) Oerst.

Distribution: China. Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, SE Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Myanmar (Burma), Nepal]. *Specimen: Meili Team 27411* (PYU, SABG). *Use(s):* none documented.

Quercus L.

Quercus acrodonta Seemen

Distribution: China. Gansu, Guizhou, Henan, Hubei, Hunan, Shaanxi, Sichuan, Yunnan. *Specimen: Meili Team 26223* (PYU, SABG). *Use(s):* forage and/or fodder, fertilizer, firewood.

Quercus aquifolioides Rehder & E. H. Wilson

Distribution: China. Guizhou, W Sichuan, Xizang (Tibet), Yunnan [Bhutan, Myanmar (Burma)]. *Specimen: Wu Sugong et al. WB-234* (KUN). *Use(s):* religious, forage and/or fodder, fertilizer, construction, firewood.

Quercus cocciferoides Hand.-Mazz.

Distribution: China. Shaanxi, Sichuan, Yunnan. *Specimen: Meili Team 27863* (PYU, SABG). *Use(s):* medicinal, fertilizer, firewood.

Quercus guajavifolia H. Lév.

Distribution: China. Guizhou, Sichuan, Yunnan. *Specimen: Fang Zhendong 1592* (SABG). *Use(s):* religious, forage and/or fodder, fertilizer, firewood.

Quercus monimotricha (Hand.-Mazz.) Hand.-Mazz.

Distribution: China. W Sichuan, NW Yunnan. *Specimen: Meili Team 25289* (PYU, SABG). *Use(s):* fertilizer, firewood.

Quercus rehderiana Hand.-Mazz.

Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan [Thailand]. *Specimen: Meili Team 27309* (PYU, SABG). *Use(s):* religious, fertilizer, firewood.

Quercus senescens Hand.-Mazz.

Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 27420* (PYU, SABG). *Use(s):* fertilizer, firewood.

Quercus spinosa David ex Franch.

Distribution: China. Fujian, Gansu, Guizhou, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Myanmar (Burma)]. *Specimen: Meili Team 27289* (PYU, SABG). *Use(s):* medicinal, fertilizer, firewood.

Quercus variabilis Blume

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Yunnan, Zhejiang [Japan, Korea]. Report based on Fang Zhendong, pers. obs. *Use(s):* fertilizer, firewood.

Gentianaceae

Comastoma (Wettst.) Toyok.

Comastoma falcatum (Turcz. ex Kar. & Kir.) Toyok.

Distribution: China. Gansu, Hebei, Nei Mongol, Qinghai, Shanxi, NW Sichuan, Xinjiang, Xizang (Tibet), Yunnan [India, Kashmir, Kyrgyzstan, Mongolia, Nepal, Russia (Siberia), Tajikistan]. *Specimen: Meili Team 26440* (PYU, SABG). *Use(s):* none documented.

Comastoma pedunculatum (Royle ex D. Don) Holub

Distribution: China. Gansu, Qinghai, W Sichuan, Xizang (Tibet), NW Yunnan [Bhutan, India, Kashmir, Nepal, Sikkim]. *Specimen: Fang Zhendong 1659* (SABG). *Use(s):* none documented.

Comastoma pulmonarium (Turcz.) Toyok.

Distribution: China. Gansu, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan [Japan, E Siberia (Russia)]. *Specimen: Meili Team 26371* (PYU, SABG). *Use(s):* medicinal.

Comastoma traillianum (Forrest) Holub

Distribution: China. Sichuan, Yunnan. *Specimen: Meilishi Team 302* (PYU, SABG). *Use(s):* none documented.

Comastoma sp.

Distribution: China. Yunnan. *Specimen: Meili Team 28787* (PYU, SABG). *Use(s):* none documented.

Crawfurdia Wall.

Crawfurdia crawfurdioides (C. Marquand) Harry Sm.

Distribution: China. Yunnan. *Specimen: Fang Zhendong 1644* (SABG). *Use(s):* medicinal.

Gentiana L.

Gentiana albomarginata C. Marquand

Distribution: China. NW Yunnan. *Specimen: Meili Team 28788* (PYU, SABG). *Use(s):* none documented.

Gentiana arethusae Burkill

Distribution: China. E Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Fang Zhendong 1661* (SABG). *Use(s):* medicinal.

Gentiana asparagoides T. N. Ho

Distribution: China. NW Yunnan. *Specimen: Meili Team 25444* (PYU, SABG). *Use(s):* none documented.

Gentiana atuntsiensis W. W. Sm.
Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 26683* (PYU, SABG). *Use(s):* medicinal, alcoholic beverage.

Gentiana bryoides Burkill
Distribution: China. S & SE Xizang (Tibet), Yunnan [Bhutan, Nepal, Sikkim]. *Specimen: Danica Anderson, Ruth Sherman & Senadorji 47* (MO, SABG). *Use(s):* none documented.

Gentiana caelestis (C. Marquand) Harry Sm.
Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan [NE Myanmar (Burma)]. *Specimen: Yu Hong 90-012* (SABG). *Use(s):* none documented.

Gentiana chungtienensis C. Marquand
Distribution: China. NW Yunnan. *Specimen: Meili Team 27428* (PYU, SABG). *Use(s):* medicinal.

Gentiana crassicaulis Duthie ex Burkill
Distribution: China. NW Guizhou, W Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Fang Zhendong & Zhang Canming 2281* (SABG). *Use(s):* medicinal.

Gentiana crassuloides Bureau & Franch.
Distribution: China. S Gansu, W Hubei, SE Qinghai, W Sichuan, S & SE Xizang (Tibet), NW Yunnan [Bhutan, NW India, Nepal, Sikkim]. *Specimen: Meili Team 26100* (PYU, SABG). *Use(s):* none documented.

Gentiana cristata Harry Sm.
Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25446* (PYU, SABG). *Use(s):* none documented.

Gentiana decorata Diels
Distribution: China. SE Xizang (Tibet), NW & W Yunnan [Myanmar (Burma)]. *Specimen: Meili Team 26348* (PYU, SABG). *Use(s):* none documented.

Gentiana filistyla Balf. f. & Forrest
Distribution: China. SE Xizang (Tibet), NW Yunnan [NE Myanmar (Burma)]. *Specimen: Meili Team 26252* (PYU, SABG). *Use(s):* medicinal.

Gentiana forrestii C. Marquand
Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 27436* (PYU, SABG). *Use(s):* none documented.

Gentiana gilvostriata C. Marquand
Distribution: China. SE Xizang (Tibet), NW Yunnan [Bhutan, NE India, NE Myanmar (Burma)]. *Specimen: Fang Zhendong 1779* (SABG). *Use(s):* none documented.

Gentiana handeliana Harry Sm.
Distribution: China. SE Xizang (Tibet), NW Yunnan [NE Myanmar (Burma)]. *Specimen: Meili Team 26207* (PYU, SABG). *Use(s):* alcoholic beverages.

Gentiana harrowiana Diels
Distribution: China. NW Yunnan [NE Myanmar (Burma)]. *Specimen: Meili Team 26194* (PYU, SABG). *Use(s):* none documented.

Gentiana intricata C. Marquand
Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 27599* (PYU, SABG). *Use(s):* none documented.

Gentiana arethusae. Photograph by Fang Zhendong.

Gentiana atuntsiensis. Photograph by Fang Zhendong.

Gentiana macrauchena C. Marquand
Distribution: China. W Hubei, S Shaanxi, E Sichuan, SE Xizang (Tibet), Yunnan. *Specimen: G. Forrest 14196* (K, type not seen). *Use(s):* none documented.

Gentiana maeulchanensis Franch.
Distribution: China. S Xizang (Tibet), NW Yunnan [Bhutan, N Myanmar (Burma), Sikkim]. *Specimen: Meili Team 25427* (PYU, SABG). *Use(s):* none documented.

Gentiana nanobella C. Marquand
Distribution: China. W Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Fang Zhendong 1705* (SABG). *Use(s):* none documented.

Gentiana oreodoxa Harry Sm.
Distribution: China. SE Xizang (Tibet), NW Yunnan [Bhutan, NE Myanmar (Burma)]. *Specimen: Handel-Mazzetti 8431* (E). *Use(s):* medicinal.

Gentiana otophora Franch.
Distribution: China. SE Xizang (Tibet), NW Yunnan [NE Myanmar (Burma)]. *Specimen: Meili Team 27968* (PYU, SABG). *Use(s):* none documented.

Gentiana panthaica Prain & Burkill
Distribution: China. Guangxi, Guizhou, Hunan, Jiangxi, Sichuan, Yunnan. *Specimen: Yang Jinsheng 8875* (YIM). *Use(s):* medicinal.

Gentiana phyllocalyx C. B. Clarke
Distribution: China. SE Xizang (Tibet), NW Yunnan [Bhutan, India, N Myanmar (Burma), Nepal, Sikkim]. *Specimen: Fang Zhendong 245* (SABG). *Use(s):* medicinal, religious.

Gentiana pluviarum W. W. Sm.
Distribution: China. NW Yunnan [NW India, Nepal, Sikkim]. *Specimen: Handel-Mazzetti 9941* (E). *Use(s):* none documented.

Gentiana prostrata Haenke
Distribution: China. W Qinghai, N Xinjiang, S & SW Xizang (Tibet), Yunnan [Kazakhstan, Kyrgyzstan, Mongolia, Nepal, Russia, Tajikistan; Europe, North America]. *Specimen: Fang Zhendong 1017* (SABG). *Use(s):* none documented.

Gentiana pubigera C. Marquand
Distribution: China. NW Yunnan. *Specimen: Meili Team 25139* (PYU, SABG). *Use(s):* medicinal.

Gentiana sikkimensis C. B. Clarke
Distribution: China. S & SE Xizang (Tibet), NW Yunnan [Bhutan, E & NW India, NE Myanmar (Burma), Nepal, Sikkim]. *Specimen: Fang Zhendong 1780* (SABG). *Use(s):* none documented.

Gentiana szechenyii Kanitz
Distribution: China. S Gansu, Qinghai, W Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Fang Zhendong 1106* (SABG). *Use(s):* none documented.

Gentiana veitchiorum Hemsl.
Distribution: China. Gansu, Qinghai, Sichuan, Xizang (Tibet), Yunnan [Bhutan, Myanmar (Burma)]. *Specimen: Meilishi Team 3* (PYU, SABG). *Use(s):* none documented.

Gentiana wardii W. W. Sm.
Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan [Myanmar (Burma)]. *Specimen: Meili Team 26343* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Gentiana yunnanensis Franch.
Distribution: China. Guizhou, SW & W Sichuan, SE Xizang (Tibet), NE & NW Yunnan. *Specimen: Fang Zhendong 1778* (SABG). *Use(s):* medicinal.

Gentianopsis Ma

Gentianopsis contorta (Royle) Ma
Distribution: China. Guizhou, Liaoning, Qinghai, Sichuan, Xizang (Tibet), Yunnan [Japan, Nepal]. *Specimen: Meili Team 28235* (PYU, SABG). *Use(s):* none documented.

Gentianopsis paludosa (Munro ex Hook. f.) Ma
Distribution: China. Gansu, Hebei, W Hubei, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Fang Zhendong 1635* (SABG). *Use(s):* medicinal.

Halenia Borkh.

Halenia elliptica D. Don
Distribution: China. Gansu, Guizhou, Hubei, Hunan, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Bhutan, India, Kyrgyzstan, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Fang Zhendong 1574* (SABG). *Use(s):* medicinal.

Lomatogonium A. Braun

Lomatogonium carinthiacum (Wulfen) Rchb.
Distribution: China. Gansu, Hebei, Qinghai, Shanxi, Sichuan, Xizang (Tibet), NW Yunnan [Afghanistan, India, Japan, Kyrgyzstan, Mongolia, Pakistan, Russia, Tajikistan; Europe]. *Specimen: Fang Zhendong 1706* (SABG). *Use(s):* none documented.

Lomatogonium longifolium Harry Sm.
Distribution: China. S Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 28039* (PYU, SABG). *Use(s):* none documented.

Lomatogonium oreocharis (Diels) C. Marquand
Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Yang Jinsheng 84-989* (YIM). *Use(s):* medicinal.

Lomatogonium perenne T. N. Ho & S. W. Liu
Distribution: China. Qinghai, Shaanxi, W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 26341* (PYU, SABG). *Use(s):* none documented.

Megacodon (Hemsl.) Harry Sm.

Megacodon stylophorus (C. B. Clarke) Harry Sm.
Distribution: China. S Sichuan, SE Xizang (Tibet), NW Yunnan [Bhutan, NE India, Nepal, Sikkim]. *Specimen: Yang Jinsheng 84-981* (YIM). *Use(s):* medicinal.

Swertia L.

Swertia asarifolia Franch.
Distribution: China. NW Yunnan. *Specimen: Meili Team 28163* (PYU, SABG). *Use(s):* medicinal.

Swertia forrestii Harry Sm.
Distribution: China. NW Yunnan. *Specimen: Fang Zhendong & Zhang Canming 2718* (SABG). *Use(s):* none documented.

Swertia macrosperma (C. B. Clarke) C. B. Clarke
Distribution: China. Guangxi, Guizhou, Hubei, Sichuan, Taiwan, Yunnan [Bhutan, India, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Fang Zhendong & Zhang Canming 2565* (SABG). *Use(s):* medicinal.

Swertia tenuis T. N. Ho & S. W. Liu
Distribution: China. S Sichuan, NW Yunnan. *Specimen: Fang Zhendong 1575* (SABG). *Use(s):* none documented.

Tripterospermum Blume

Tripterospermum volubile (D. Don) H. Hara
Distribution: China. Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Meili Team 28212* (PYU, SABG). *Use(s):* medicinal.

Veratrilla Baill. ex Franch.

Veratrilla baillonii Franch.
Distribution: China. W Sichuan, SE Xizang (Tibet), NW Yunnan [E India]. *Specimen: Fang Zhendong 1047* (SABG). *Use(s):* medicinal.

Geraniaceae

Geranium L.

Geranium delavayi Franch.
Distribution: China. S Sichuan, Yunnan. *Specimen: Meili Team 26111* (PYU, SABG). *Use(s):* medicinal, religious, firewood.

Geranium donianum Sweet
Distribution: China. S Gansu, SE Qinghai, W Sichuan, E Xizang (Tibet), NW Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Meili Team 28037* (PYU, SABG). *Use(s):* medicinal.

Geranium nepalense Sweet
Distribution: China. Gansu, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Qinghai, Shaanxi, Shanxi, Sichuan, E Xizang (Tibet), Yunnan [Afghanistan, Bhutan, NE & S India, Indonesia (N Sumatra), Kashmir, Laos, N Myanmar (Burma), Nepal, Pakistan, Sri Lanka, Thailand, N Vietnam]. *Specimen: Fang Zhendong 1639* (SABG). *Use(s):* forage and/or fodder.

Geranium polyanthes Edgew. & Hook. f.
Distribution: China. Sichuan, SE Xizang (Tibet), NW Yunnan [Bhutan, N India, Nepal]. *Specimen: Meili Team 26165* (PYU, SABG). *Use(s):* medicinal.

Geranium refractum Edgew. & Hook. f.
Distribution: China. Sichuan, S Xizang (Tibet), Yunnan [Bhutan, N India, N Myanmar (Burma), Nepal]. *Specimen: Meili Team 26935* (PYU, SABG). *Use(s):* medicinal.

Geranium robertianum L.
Distribution: China. Guizhou, Hubei, Hunan, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhe-

jiang [Japan, Kazakhstan, Korea, Kyrgyzstan, Nepal, Pakistan, Russia, Tajikistan, Turkmenistan, Uzbekistan; Africa, W Asia, Europe]. *Specimen: Meili Team 26074* (PYU, SABG). *Use(s):* medicinal.

Geranium sibiricum L.

Distribution: China. Gansu, NE Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Afghanistan, N Japan, Kazakhstan, Korea, Kyrgyzstan, Mongolia, Pakistan, Russia, Tajikistan, Turkmenistan, Uzbekistan; W Asia, Europe]. *Specimen: Danica Anderson, Ruth Sherman & Sendorji 73* (MO, SABG). *Use(s):* none documented.

Geranium yunnanense Franch.

Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Bee Gunn 157* (MO, SABG). *Use(s):* medicinal.

Gesneriaceae

Ancylostemon Craib

Ancylostemon aureus (Franch.) B. L. Burtt

Distribution: China. Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Corallodiscus Batalain

Corallodiscus conchifolius Batalin

Distribution: China. S Gansu, NW Sichuan, SE Xizang (Tibet), NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Corallodiscus lanuginosus (Wall. ex R. Br.) B. L. Burtt

Distribution: China. N Guangdong, N Guangxi, Guizhou, Hebei, Henan, Hubei, NW Hunan, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, N India, Nepal, Sikkim, Thailand]. *Specimen: George Yatskievych 04-074* (KUN, MO). *Use(s):* medicinal.

Grossulariaceae

Ribes L.

Ribes alpestre Wall. ex Decne.

Distribution: China. Gansu, SE Ningxia, Qinghai, Shaanxi, Shanxi, W Sichuan, SE Xizang (Tibet), W Yunnan [Afghanistan, Bhutan, Kashmir]. *Specimen: Meili Team 25811* (PYU, SABG). *Use(s):* food, religious, construction.

Ribes altissimum Turcz. ex Pojark.

Distribution: China. N Xinjiang, Yunnan [N Mongolia, Russia (Siberia)]. *Specimen: Jan Salick et al. 9517* (MO, SABG). *Use(s):* none documented.

Ribes glaciale Wall.

Distribution: China. SE Gansu, Henan, W Hubei, Shaanxi, Sichuan, SE Xizang (Tibet), NW Yunnan [Bhutan, N India, Kashmir, N Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 25089* (PYU, SABG). *Use(s):* none documented.

Ribes himalense Royle ex Decne.

Distribution: China. Gansu, Hebei, NW Henan, W Hubei, Nei Mongol, SE Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), NW Yunnan [Bhutan, Kashmir, Nepal, Sikkim]. *Specimen: Sun Hongyan et al. 33* (KUN, MO). *Use(s):* medicinal.

Ribes longiracemosum Franch.

Distribution: China. SE Gansu, W Hubei, E Shaanxi, Sichuan, Yunnan. *Specimen: Meili Team s.n.* (PYU, SABG). *Use(s):* none documented.

Ribes moupinense Franch.

Distribution: China. SW Anhui, Gansu, NE Guizhou, W Hubei, Shaanxi, Sichuan, Yunnan. *Specimen: Meili Team 24771* (PYU, SABG). *Use(s):* food, medicinal, firewood.

Ribes orientale Desf.

Distribution: China. W Sichuan, Xizang (Tibet), NW Yunnan [Bhutan, India, Kashmir, Nepal, Russia; SW Asia, SE Europe]. *Specimen: Meili Team 25230* (PYU, SABG). *Use(s):* food.

Ribes takare D. Don

Distribution: China. SE Gansu, E Guizhou, SW Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, N India, Kashmir, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 27359* (PYU, SABG). *Use(s):* none documented.

Helwingiaceae

Helwingia Willd.

Helwingia chinensis Batalin

Distribution: China. S Gansu, Guizhou, W Hubei, Hunan, S Shaanxi, Sichuan, SE Xizang (Tibet), Yunnan [N Myanmar (Burma), Thailand]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Helwingia himalaica Hook. f. & Thomson ex C. B. Clarke

Distribution: China. Chongqing, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Sichuan, Xizang (Tibet), Yunnan [Bhutan, N India, N Myanmar (Burma), Nepal, Sikkim, N Vietnam]. *Specimen: George Yatskievych 04-003* (KUN, MO). *Use(s):* medicinal.

Helwingia japonica (Thunb.) F. Dietr.

Distribution: China. Anhui, Fujian, SE Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, S Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Yunnan, Zhejiang [Bhutan, Japan, S Korea, N Myanmar (Burma)]. *Specimen: Meili Team 25021* (PYU, SABG). *Use(s):* medicinal.

Hydrangeaceae

Deutzia Thunb.

Deutzia aspera Rehder

Distribution: China. S Xizang (Tibet), Yunnan. *Specimen: George Yatskievych, Deng Zhiwei, Ana & Naji 04-186* (KUN, MO). *Use(s):* none documented.

Deutzia glomeruliflora Franch.

Distribution: China. W Sichuan, N Yunnan. *Specimen: Meili Team 28147* (PYU, SABG). *Use(s):* ornamental.

Deutzia longifolia Franch.

Distribution: China. Gansu, Guizhou, Sichuan, Yunnan. *Specimen: Meili Team 27539* (PYU, SABG). *Use(s):* medicinal, firewood.

Deutzia monbeigii W. W. Sm.

Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 24902* (PYU, SABG). *Use(s):* none documented.

Deutzia purpurascens (Franch. ex L. Henry) Rehder

Distribution: China. Sichuan, SE Xizang (Tibet), Yunnan [India, Myanmar (Burma)]. *Specimen: Meili Team 25422* (PYU, SABG). *Use(s):* none documented.

Deutzia subulata Hand.-Mazz.

Distribution: China. S Sichuan, NW Yunnan. *Specimen: Meili Team 25090* (PYU, SABG). *Use(s):* firewood.

Hydrangea L.

Hydrangea heteromalla D. Don

Distribution: China. Sichuan, S Xizang (Tibet), Yunnan [Bhutan, NE India, Nepal, Sikkim]. *Specimen: Meili Team 25801* (PYU, SABG). *Use(s):* firewood.

Hydrangea hypoglauca Rehder

Distribution: China. NE Guizhou, W Hubei, NW Hunan, SW Shaanxi, E Sichuan, NW Yunnan. *Specimen: Meili Team 27900* (PYU, SABG). *Use(s):* none documented.

Philadelphus L.

Philadelphus dasycalyx (Rehder) S. Y. Hu

Distribution: China. Gansu, Henan, Shaanxi, Shanxi, Yunnan. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn & Yin Xuezhen 341* (MO, SABG). *Use(s):* medicinal.

Philadelphus delavayi L. Henry

Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Myanmar (Burma)]. *Specimen: Meili Team 25214* (PYU, SABG). *Use(s):* none documented.

Philadelphus purpurascens (Koehne) Rehder

Distribution: China. Sichuan, Yunnan. *Specimen: Meili Team 27306* (PYU, SABG). *Use(s):* none documented.

Philadelphus sericanthus Koehne

Distribution: China. Anhui, Gansu, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Yunnan. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn, Yin Xuezhen & Senadorji 270* (MO, SABG). *Use(s):* handcrafts.

Hypericaceae

Hypericum L.

Hypericum augustinii N. Robson

Distribution: China. SW Guizhou, S Yunnan. *Specimen: Jan Salick et al. 9551* (MO, SABG). *Use(s):* none documented.

Hypericum forrestii (Chitt.) N. Robson

Distribution: China. W & C Sichuan, N & SW Yunnan [NE Myanmar (Burma)]. *Specimen: Meili Team 25173* (PYU, SABG). *Use(s):* none documented.

Hypericum henryi H. Lév. & Vaniot

Distribution: China. C & SW Guizhou, C & S Sichuan, Yunnan [Indonesia, Myanmar (Burma), Thailand, N Vietnam]. *Specimen: George Yatskievych 04-154* (KUN, MO). *Use(s):* none documented.

Hypericum monanthemum Hook. f. & Thomson ex Dyer

Distribution: China. W Sichuan, SE Xizang (Tibet), Yunnan [Bhutan, NE India, N Myanmar (Burma), Nepal]. *Specimen: Heidi Schmidt 4021* (MO, SABG). *Use(s):* none documented.

Hypericum petiolulatum Hook. f. & Thomson ex Dyer

Distribution: China. Fujian, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, SE Xizang (Tibet), Yunnan [Bhutan, NE India, N Myanmar (Burma), Nepal, N Vietnam]. *Specimen: Kurt Hoffmeister 39* (MO, SABG). *Use(s):* none documented.

Iridaceae

Iris L.

Iris chrysographes Dykes

Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan [Myanmar (Burma)]. *Specimen: Danica Anderson, Jan Salick, Bee Gunn & Peiji 216* (MO, SABG). *Use(s):* ornamental.

Iris ruthenica Ker Gawl.

Distribution: China. Anhui, Gansu, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Yunnan [Kazakhstan, Korea, Mongolia, Russia; E Europe]. *Specimen: Kurt Hoffmeister, Deng Zhiwei & Anthony Amend 106* (MO, SABG). *Use(s):* forage and/or fodder.

Iris tectorum Maxim.

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan, Zhejiang [Japan, Korea, cultivated in Bhutan & India]. *Specimen: Meili Team 24994* (PYU, SABG). *Use(s):* medicinal.

Juglandaceae

Juglans L.

Juglans mandshurica Maxim.

Distribution: China. Anhui, Fujian, Gansu, Guangxi, Guizhou, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shaanxi, Shanxi, Sichuan, Taiwan, Yunnan, Zhejiang [N Korea]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Juglans regia L.

Distribution: China (widely distributed in C, E, NW & SW China), Yunnan [SW Asia into Himalaya, SE Europe]. *Specimen: Liu Lin 131* (SABG). *Use(s):* medicinal, oil.

Juglans sigillata Dode

Distribution: China. Guizhou, Sichuan, SE Xizang (Tibet), Yunnan [Bhutan, Sikkim]. *Specimen: Jessica Woo, Ruth Sherman & Jan Salick 556* (MO, SABG). *Use(s):* firewood

Juncaceae

Juncus L.

Juncus allioides Franch

Distribution: China. Gansu, Guizhou, Henan, Hubei, Ningxia, Qinghai, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, Sikkim]. *Specimen: Meili Team 26013* (PYU, SABG). *Use(s):* none documented.

Juncus benghalensis Kunth

Distribution: China. Xizang (Tibet), Yunnan [Bhutan, Kashmir, Nepal, Sikkim]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Juncus bufonius L.

Distribution: China. Anhui, Fujian, Gansu, Guizhou, Hebei, Heilongjiang, Henan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang [Afghanistan, Bhutan, India, Japan, Kazakhstan, Korea, Mongolia, Nepal, Pakistan, the Philippines, Russia, Sikkim, Sri Lanka,

Thailand, Vietnam; SW Asia, Europe, North America, South America]. *Specimen: Meili Team 26664* (PYU, SABG). *Use(s):* none documented.

Juncus clarkei Buchenau

Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Sikkim]. *Specimen: Meili Team 26184* (PYU, SABG). *Use(s):* none documented.

Juncus concinnus D. Don

Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Kashmir, Nepal, Sikkim]. *Specimen: Meili Team 26106* (PYU, SABG). *Use(s):* none documented.

Juncus kingii Rendle

Distribution: China. Qinghai, Sichuan, Xizang (Tibet), Yunnan [Bhutan, Nepal, Sikkim]. *Specimen: Meili Team 26712* (PYU, SABG). *Use(s):* none documented.

Juncus leucanthus Royle ex D. Don

Distribution: China. Gansu, Qinghai, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Meili Team 26829* (PYU, SABG). *Use(s):* none documented.

Juncus leucomelas Royle ex D. Don

Distribution: China. Gansu, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Kashmir, Nepal, Pakistan, Sikkim]. *Specimen: Meili Team 25342* (PYU, SABG). *Use(s):* none documented.

Juncus membranaceus Royle ex D. Don

Distribution: China. Xizang (Tibet), Yunnan [Afghanistan, Kashmir, Nepal, Pakistan]. *Specimen: Fang Zhendong 1678* (SABG). *Use(s):* none documented.

Juncus minimus Buchenau

Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, Nepal, Sikkim]. *Specimen: Fang Zhendong 1685* (SABG). *Use(s):* none documented.

Juncus przewalskii Buchenau

Distribution: China. Gansu, Qinghai, Shaanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26602* (PYU, SABG). *Use(s):* none documented.

Juncus sikkimensis Hook. f.

Distribution: China. Gansu, Qinghai, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Fang Zhendong 1672* (SABG). *Use(s):* none documented.

Juncus sphacelatus Decne.

Distribution: China. Qinghai, Sichuan, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, India, Kashmir, Nepal, Sikkim]. *Specimen: Meili Team 25971* (PYU, SABG). *Use(s):* none documented.

Luzula DC.

Luzula multiflora (Ehrh.) Lej.

Distribution: China. Anhui, Fujian, Gansu, Guizhou, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Qinghai, Shaanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Japan, Mongolia, Nepal, Russia, Sikkim; Europe, North America, Oceania]. *Specimen: Meili Team 25004* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Luzula parviflora (Ehrh.) Desv.

Distribution: China. Xinjiang, Yunnan [Mongolia; Europe, North America]. *Specimen: Meili Team 25594* (PYU, SABG). *Use(s):* forage and/or fodder.

Lamiaceae

Agastache J. Clayton ex Gronov.

Agastache rugosa (Fisch. & C. A. Mey.) Kuntze

Distribution: China. Widely distributed and cultivated [Japan, Korea, Russia; North America]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal, oil.

Ajuga L.

Ajuga forrestii Diels

Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26690* (PYU, SABG). *Use(s):* medicinal.

Amethystea L.

Amethystea coerulea L.

Distribution: China. Anhui, Gansu, Hebei, Henan, Hubei, Jilin, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Japan, Kazakhstan, Korea, Kyrgyzstan, Mongolia, Russia; SW Asia]. Report based on Fang Zhendong, pers. obs. *Use(s):* ornamental.

Caryopteris Bunge

Caryopteris forrestii Diels

Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Zhu Weiming 044* (PYU). *Use(s):* medicinal, religious, herb and/or spice, forage and/or fodder.

Caryopteris trichosphaera W. W. Sm.

Distribution: China. W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Zhu Weiming 045* (PYU). *Use(s):* medicinal.

Clerodendrum L.

Clerodendrum bungei Steud.

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Yunnan, Zhejiang [Vietnam]. *Specimen: Meili Team 27224* (PYU, SABG). *Use(s):* medicinal.

Clerodendrum yunnanense Hu ex Hand.-Mazz.

Distribution: China. SW Sichuan, Yunnan. *Specimen: Wu Sugong et al. WB-175* (KUN). *Use(s):* none documented.

Clinopodium L.

Clinopodium chinense (Benth.) Kuntze

Distribution: China. Anhui, Fujian, Guangdong, Guangxi, Hubei, Hunan, Jiangsu, Jiangxi, Shandong, Taiwan, Yunnan, Zhejiang [Japan]. *Specimen: Meili Team 25233* (PYU, SABG). *Use(s):* medicinal.

Clinopodium polycephalum (Vaniot) C. Y. Wu & S. J. Hsuan

Distribution: China. Anhui, Fujian, Gansu, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Shaanxi, Shandong, Shanxi, Jiangsu, Jiangxi, Sichuan, Yunnan, Zhejiang. *Specimen: Meili Team 27882* (PYU, SABG). *Use(s):* medicinal.

Clinopodium repens (Buch.-Ham. ex D. Don) Benth.

Distribution: China. Fujian, Gansu, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang [Bhutan, India, Indonesia, Japan, Myanmar (Burma), Nepal, the Philippines, Sri Lanka]. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn, Yin Xuezhen & Peiji 261* (MO, SABG). *Use(s):* none documented.

Elsholtzia Willd.

Elsholtzia capituligera C. Y. Wu

Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Zhu Weiming 049* (PYU). *Use(s):* none documented.

Elsholtzia ciliata (Thunb.) Hyl.

Distribution: China. All provinces except Qinghai, Xinjiang, Yunnan [Cambodia, India, Japan, Laos, Malaysia, Mongolia, Myanmar (Burma), Russia, Thailand, Vietnam; introduced in Europe, North America]. *Specimen: Meili Team 26640* (PYU, SABG). *Use(s):* medicinal, veterinary, poisonous.

Elsholtzia densa Benth.

Distribution: China. Gansu, Hebei, Liaoning, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Afghanistan, India (Sikkim), Nepal, Pakistan, Tajikistan]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Elsholtzia fruticosa (D. Don) Rehder

Distribution: China. Gansu, Guangxi, Guizhou, Hubei, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal]. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn, Yin Xuezhen & Senadorji 320* (MO, SABG). *Use(s):* medicinal, herb and/or spice.

Elsholtzia ochroleuca Dunn

Distribution: China. Sichuan, Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Elsholtzia strobilifera (Benth.) Benth.

Distribution: China. Sichuan, Taiwan, Xizang (Tibet), Yunnan [India, Nepal]. *Specimen: Meili Team 28105* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Eriophyton Benth.

Eriophyton wallichii Benth.

Distribution: China. Qinghai, Sichuan, Xizang (Tibet), Yunnan [Sikkim, Nepal]. *Specimen: Meili Team 26496* (PYU, SABG). *Use(s):* medicinal.

Galeopsis L.

Galeopsis bifida Boenn.

Distribution: China. Gansu, Guizhou, Heilongjiang, Hubei, Jilin, Nei Mongol, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet),

Yunnan [Japan, Kyrgyzstan, Korea, Mongolia, Russia; Europe, North America]. Report based on Fang Zhendong, pers. obs. *Use(s):* oil.

Isodon (Schrad. ex Benth.) Spach

Isodon leucophyllus (Dunn) Kudô
Distribution: China. Sichuan, Yunnan. *Specimen: Meili Team 26051* (PYU, SABG). *Use(s):* none documented.

Isodon loxothyrsus (Hand.-Mazz.) H. Hara
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26674* (PYU, SABG). *Use(s):* none documented.

Isodon sculponeatus (Vaniot) Kudô
Distribution: China. Guangxi, Guizhou, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [India, Nepal]. *Specimen: Meili Team 25185* (PYU, SABG). *Use(s):* none documented.

Isodon setschwanensis (Hand.-Mazz.) H. Hara
Distribution: China. Sichuan, Yunnan. *Specimen: Danica Anderson, Ruth Sherman & Norbu Cili 113* (MO, SABG). *Use(s):* herb and/or spice.

Isodon wikstroemioides (Hand.-Mazz.) H. Hara
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meilishi Team 338* (PYU, SABG). *Use(s):* none documented.

Lamiophlomis Kudô

Lamiophlomis rotata (Benth. ex Hook. f.) Kudô
Distribution: China. Gansu, Qinghai, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal]. *Specimen: Meili Team 25861* (PYU, SABG). *Use(s):* medicinal.

Lamium L.

Lamium amplexicaule L.
Distribution: China. Anhui, Fujian, Gansu, Guizhou, Henan, Hubei, Hunan, Jiangsu, Qinghai, Shaanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang [naturalized widely in temperate regions worldwide]. *Specimen: Meili Team 25300* (PYU, SABG). *Use(s):* medicinal.

Lycopus L.

Lycopus lucidus Turcz. ex Benth.
Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Heilongjiang, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Yunnan, Zhejiang [Japan, Russia]. *Specimen: Meili Team 27218* (PYU, SABG). *Use(s):* medicinal.

Marmoritis Benth.

Marmoritis complanatum (Dunn) A. L. Budantzev
Distribution: China. Qinghai, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25893* (PYU, SABG). *Use(s):* medicinal.

Mentha L.

Mentha canadensis L.
Distribution: China. Anhui, Beijing, Chongqing, Fujian, Gansu, Guangdong, Guangzi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanghai, Shanxi, Sichuan, Taiwan, Tianjin, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang [Cambodia, Japan, Korea, Laos, Malaysia, Myanmar (Burma), Russia, Thailand, Vietnam; North America]. *Specimen: Zhu Weiming 055* (PYU). *Use(s):* food, medicinal.

Nepeta L.

Nepeta cataria L.
Distribution: China. Cultivated throughout [cultivated worldwide]. *Specimen: George Yatskievych, Deng Zhiwei, Ana & Naji 04-194* (KUN, MO). *Use(s):* medicinal.

Nepeta laevigata (D. Don) Hand.-Mazz.
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Afghanistan, India, Nepal]. *Specimen: Meili Team 26157* (PYU, SABG). *Use(s):* medicinal, pesticide.

Nepeta stewartiana Diels
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Nepeta tenuiflora Diels
Distribution: China. Sichuan, Yunnan. *Specimen: Meili Team 25964* (PYU, SABG). *Use(s):* medicinal.

Origanum L.

Origanum vulgare L.
Distribution: China. Cultivated throughout [cultivated worldwide]. *Specimen: Danica Anderson,*

Jan Salick, Bee Gunn & Yin Xuezhen 368 (MO, SABG). *Use(s):* herb and/or spice.

Phlomis L.

Phlomis atropurpurea Dunn

Distribution: China. Yunnan. *Specimen: Meili Team 26024* (PYU, SABG). *Use(s):* none documented.

Phlomis ornata C. Y. Wu

Distribution: China. Nei Mongol, Shaanxi, Shanxi, Xinjiang, Yunnan, Sichuan. *Specimen: Danica Anderson, Jan Salick, Bee Gunn, Yin Xuezhen & Sen Dorje 328* (MO, SABG). *Use(s):* none documented.

Prunella L.

Prunella hispida Benth.

Distribution: China. Sichuan, Xizang (Tibet), Yunnan [India]. *Specimen: Meili Team 25985* (PYU, SABG). *Use(s):* medicinal.

Salvia L.

Salvia campanulata Wall. ex Benth.

Distribution: Xizang (Tibet), Yunnan [Bhutan, India, Myanmar (Burma), Nepal]. *Specimen: Meili Team 26126* (PYU, SABG). *Use(s):* none documented.

Salvia evansiana Hand.-Mazz.

Distribution: China. Sichuan, Yunnan. *Specimen: Meili Team 28073* (PYU, SABG) *Use(s):* medicinal.

Salvia flava Forrest ex Diels

Distribution: China. Sichuan, Yunnan. *Specimen: Meili Team 26125* (PYU, SABG). *Use(s):* medicinal.

Salvia mairei H. Lév.

Distribution: China. Yunnan. *Specimen: Meili Team 25506* (PYU, SABG). *Use(s):* medicinal.

Salvia mekongensis E. Peter

Distribution: China. Yunnan. *Specimen: Fang Zhendong 1728* (SABG). *Use(s):* medicinal.

Salvia przewalskii Maxim.

Distribution: China. Gansu, Hubei, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25069* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder, pollination services.

Salvia trijuga Diels

Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26057* (PYU, SABG). *Use(s):* medicinal.

Stachys L.

Stachys sieboldii Miq.

Distribution: China. Nei Mongol, Shaanxi, Shanxi, Xinjiang, Yunnan [widely cultivated]. *Specimen: Meili Team 25169* (PYU, SABG). *Use(s):* food, medicinal

Vitex L.

Vitex negundo L.

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Nei Mongol, Ningxia, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Japan; E Africa, S & SE Asia, Pacific Islands]. *Specimen: Meili Team 24798* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Lardizabalaceae

Holboellia Wall

Holboellia angustifolia Wall.

Distribution: China. Anhui, Guangdong, Guangxi, Guizhou, Hubei, Shaanxi, Sichuan, E Xizang (Tibet), Yunnan [Bhutan, N India, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 27365* (PYU, SABG). *Use(s):* food, medicinal

Holboellia grandiflora Réaub.

Distribution: China. Guizhou, Sichuan, Yunnan [Vietnam]. *Specimen: Jan Salick & Robert Moseley 9361* (MO, SABG). *Use(s):* medicinal, oil.

Holboellia latifolia Wall.

Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan [Bhutan, NE India, Nepal, Sikkim]. *Specimen: Meili Team 27238* (PYU, SABG). *Use(s):* medicinal.

Lauraceae

Cinnamomum Schaeff

Cinnamomum glanduliferum (Wall.) Meisn.

Distribution: China S Guizhou, S & SW Sichuan, SE Xizang (Tibet), C & N Yunnan [Bhutan, India, Malaysia, Myanmar (Burma), Nepal]. *Specimen: Meili Team 25283* (PYU, SABG) *Use(s):* medicinal, handicrafts.

Laurus L.

Laurus nobilis L.

Distribution: Cultivated widely [cultivated worldwide]. *Specimen: Fang Zhendong 1415* (SABG). *Use(s):* medicinal, herb and/or spice, veterinary, resin.

Lindera Thunb.

Lindera kariensis W. W. Sm.

Distribution: China. W Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Lindera obtusiloba Blume

Distribution: China. Anhui, Fujian, S Gansu, Henan, Hubei, Hunan, Jiangsu, Jiangxi, S Liaoning, S Shaanxi, E Shandong, Sichuan, Xizang (Tibet), NW Yunnan, Zhejiang [Bhutan, India, Japan, Korea, Nepal]. Report based on Fang Zhendong, pers. obs. *Use(s):* handcrafts, oil.

Litsea Lam.

Litsea chunii W. C. Cheng

Distribution: China. S Gansu, W Sichuan, NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* oil, resin.

Litsea populifolia (Hemsl.) Gamble

Distribution: China. Sichuan, Xizang (Tibet), NE Yunnan. *Specimen: Meili Team 25017* (PYU, SABG). *Use(s):* oil.

Litsea pungens Hemsl.

Distribution: China. Gansu, N Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Shaanxi, S Shanxi, Sichuan, Xizang (Tibet), Yunnan, S Zhejiang. *Specimen: Meili Team 25023* (PYU, SABG). *Use(s):* medicinal.

Litsea rubescens Lecomte

Distribution: China. Chonqing, Guizhou, Hubei, Hunan, S Shaanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 27262* (PYU, SABG). *Use(s):* medicinal.

Machilus Rumph. ex Nees

Machilus viridis Hand.-Mazz.

Distribution: China. SW Sichuan, Xizang (Tibet), NW Yunnan. *Specimen: Fang Zhendong 1826* (PYU, SABG). *Use(s):* medicinal.

Lentibulariaceae

Pinguicula L.

Pinguicula alpina L.

Distribution: China. N Guizhou, W Hubei, S Shaanxi, Sichuan, Xizang (Tibet), NW Yunnan [Bhutan, N India, Kashmir, Mongolia, N Myanmar (Burma), Nepal, Russia, Sikkim; Europe]. *Specimen: Meili Team 25431* (PYU, SABG). *Use(s):* none documented.

Liliaceae

Aletra L.—see Nartheciaceae

Allium L.—see Amaryllidaceae

Asparagus L.—see Asparagaceae

Cardiocrinum (Endl.) Lindl.

Cardiocrinum giganteum (Wall.) Makino

Distribution: China. Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Shaanxi, Sichuan, S Xizang (Tibet), Yunnan [Bhutan, NE India, Myanmar (Burma), Nepal, Sikkim]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Clintonia Raf.

Clintonia udensis Trautv. & C. A. Mey.

Distribution: China. Gansu, Hebei, Heilongjiang, Henan, Hubei, Jilin, Liaoning, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Japan, Korea, Myanmar (Burma), Russia, Sikkim]. *Specimen: George Yatskievych 04-061* (KUN, MO). *Use(s):* medicinal.

Disporum Salisb.—see Colchicaceae

Fritillaria L.

Fritillaria cirrhosa D. Don

Distribution: China. Gansu, Qinghai, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Jan Salick 9670* (MO, SABG). *Use(s):* medicinal.

Fritillaria delavayi Franch.

Distribution: China. Qinghai, Sichuan, Xizang (Tibet), Yunnan [Bhutan, Sikkim]. *Specimen: Jan Salick 9532* (MO, SABG). *Use(s):* medicinal.

Heterosmilax Kunth—see Smilacaceae

Lilium L.

Lilium davidii Duch. ex Elwes

Distribution: China. Gansu, Guizhou, Henan,

W Hubei, S Shaanxi, Shanxi, Sichuan, Yunnan. *Specimen: Jessica Woo & Ruth Sherman 466* (MO, SABG). *Use(s):* food, medicinal, forage and/or fodder, ornamental.

Lilium duchartrei Franch.
Distribution: China. Gansu, Hubei, Sichuan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Lilium lophophorum (Bureau & Franch.) Franch.
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Jessica Woo, Ruth Sherman & Jan Salick 692* (MO, SABG). *Use(s):* medicinal.

Lilium souliei (Franch.) Sealy
Distribution: China. Sichuan, SE Xizang (Tibet), Yunnan. *Specimen: George Yatskievych, Nicholas Turland, Wu Sugong & Xiang Jianying 02-43* (KUN, MO). *Use(s):* medicinal.

Lloydia Salisb. ex Rchb.

Lloydia oxycarpa Franch.
Distribution: China. S Gansu, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25597* (PYU, SABG). *Use(s):* none documented.

Lloydia yunnanensis Franch.
Distribution: China. W Sichuan, Yunnan [Sikkim]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Maianthemum F. C. Wigg.—see Asparagaceae

Nomocharis Franch.

Nomocharis aperta (Franch.) E. H. Wilson
Distribution: China. SW Sichuan, Xizang (Tibet), NW Yunnan [N Myanmar (Burma)]. *Specimen: Jan Salick et al. 9579* (MO, SABG). *Use(s):* none documented.

Nomocharis saluenensis Balf. f.
Distribution: China. Sichuan, Xizang (Tibet), NW Yunnan [N Myanmar (Burma)]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Notholirion Wall. ex Boiss.

Notholirion bulbuliferum (Lingelsh. ex H. Limpr.) Stearn
Distribution: China. Gansu, Shaanxi, Sichuan Xizang (Tibet), Yunnan [Bhutan, Nepal, Sikkim]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Ophiopogon Ker Gawl.—see Asparagaceae

Paris L.—see Melanthiaceae

Polygonatum Mill.—see Asparagaceae

Reineckea Kunth

Reineckea carnea (Andrews) Kunth
Distribution: China. Anhui, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Yunnan, Zhejiang [Japan]. *Specimen: Fang Zhendong 1765* (SABG). *Use(s):* medicinal.

Smilax L.—see Smilacaceae

Streptopus Michx.

Streptopus parviflorus Franch.
Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Meili Team 25386* (PYU, SABG). *Use(s):* none documented.

Streptopus simplex D. Don
Distribution: China. S Xizang (Tibet), Yunnan [Bhutan, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 25591* (PYU, SABG). *Use(s):* medicinal

Tofieldia Huds.—see Tofieldiaceae

Trillium L.—see Melanthiaceae

Linnaeaceae—see Caprifoliaceae

Lobariaceae—see Saxifragaceae

Loganiaceae—see Scrophulariaceae

Loranthaceae

Scurrula L.

Scurrula atropurpurea (Blume) Danser
Distribution: China. NW Guangxi, Guizhou, Yunnan [Indonesia, Malaysia, the Philippines, Thailand, Vietnam]. *Specimen: Meili Team 24909* (PYU, SABG) *Use(s):* medicinal

Taxillus Tiegh

Taxillus caloreas (Diels) Danser
Distribution: China. Chongqing, Fujian, N Guangdong, Guangxi, Guizhou, Hubei,

Sichuan, Taiwan, Xizang (Tibet), Yunnan [Bhutan]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Taxillus delavayi (Tiegh.) Danser
Distribution: China. NW Guangxi, W Guizhou, Sichuan, E Xizang (Tibet), Yunnan, Myanmar (Burma), N Vietnam]. *Specimen: Meili Team 27300* (PYU, SABG). *Use(s):* medicinal.

Taxillus thibetensis (Lecomte) Danser
Distribution: China. Gansu, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Jessica Woo & Ruth Sherman 527* (MO, SABG). *Use(s):* medicinal, firewood.

Lythraceae

Punica L.

Punica granatum L.
Distribution: China. Widely cultivated and naturalized [cultivated worldwide]. *Specimen: George Yatskievych 04-172* (KUN, MO). *Use(s):* food, medicinal.

Magnoliaceae

Schisandra Michx.—see Schisandraceae

Yulania Spach

Yulania campbellii (Hook. f. & Thomson) D. L. Fu
Distribution: China. S Xizang (Tibet), NW Yunnan [Bhutan, NE India (Assam), N Myanmar (Burma), Nepal, Sikkim]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal, ornamental.

Malvaceae

Malva L.

Malva verticillata L.
Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Korea, Mongolia, Myanmar (Burma), Pakistan; E Africa, Europe, invasive weed in North America]. *Specimen: Meili Team 26731* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder, handcrafts.

Tilia L.

Tilia chinensis Maxim.
Distribution: China. Gansu, Henan, Hubei, Shaanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Liu Lin 16* (SABG). *Use(s):* ornamental, handcrafts, forage and/or fodder, fiber.

Tilia likiangensis Hung T. Chang
Distribution: China. NW Yunnan. *Specimen: Wu Sugong et al. WB-117* (KUN). *Use(s):* none documented.

Tilia paucicostata Maxim.
Distribution: China. Gansu, Hebei, Henan, Hubei, Hunan, Shaanxi, Sichuan, Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* ornamental, handcrafts, forage and/or fodder, fiber.

Melanthiaceae

Paris L.

Paris mairei H. Lév.
Distribution: China. Guizhou, W Sichuan, N Yunnan. *Specimen: Meili Team 24878* (PYU, SABG). *Use(s):* medicinal.

Paris polyphylla Sm.
Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Laos, Myanmar (Burma), Nepal, Sikkim, Thailand, Vietnam]. *Specimen: Jan Salick & Sonam Dorje 9628* (MO, SABG). *Use(s):* medicinal, poisonous.

Trillium L.

Trillium tschonoskii Maxim.
Distribution: China. Anhui, Fujian, Gansu, Hubei, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, Japan, Korea, Myanmar (Burma), Sikkim]. *Specimen: Meili Team 27273* (PYU, SABG). *Use(s):* medicinal.

Meliaceae

Melia L.

Melia azedarach L.
Distribution: China. Anhui, Fujian, S Gansu,

Guangdong, Guangxi, Guizhou, Hainan, S Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, S Shaanxi, Shandong, S Shanxi, Sichuan, Taiwan, Yunnan, SE Xizang (Tibet), Zhejiang [Bhutan, India, Indonesia, Laos, Nepal, New Guinea, the Philippines, Sri Lanka, Thailand, Vietnam; tropical Australia, Pacific Islands (Solomon Islands)]. *Specimen: Wu Sugong et al. WB-115* (KUN). *Use(s):* wood.

Menispermaceae

Stephania Lour.

Stephania delavayi Diels

Distribution: China. S Guizhou, S Sichuan, Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Stephania epigaea H. S. Lo

Distribution: China. S Guizhou, S Sichuan, Yunnan. *Specimen: Meili Team 25761* (PYU, SABG). *Use(s):* medicinal.

Menyanthaceae

Menyanthes L.

Menyanthes trifoliata L.

Distribution: China. Guizhou, Hebei, Heilongjiang, Jilin, Liaoning, Sichuan, Xizang (Tibet), Yunnan, NE Zhejiang [Japan, Kashmir, Mongolia, Nepal, Russia; N Africa, C & SW Asia, North America, Europe]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Morinaceae—see Caprifoliaceae

Moraceae

Morus L.

Morus alba L.

Distribution: China. Cultivated throughout [cultivated worldwide]. *Specimen: George Yatskievych 04-144* (KUN, MO). *Use(s):* food, medicinal, handcrafts.

Morus mongolica (Bureau) C. K. Schneid.

Distribution: China. N Anhui, NE Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, NW Hunan, Jiangsu, Jilin, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan, SE Xizang (Tibet), Yunnan [Japan, Korea, Mongolia]. *Specimen: Jessica Woo, Ruth Sherman & Jan Salick 623* (MO, SABG). *Use(s):* medicinal, firewood

Morinaceae—see Caprifoliaceae

Myrsinaceae—see Primulaceae

Nartheciaceae

Aletris L.

Aletris glabra Bureau & Franch.

Distribution: China. Fujian, Gansu, Guizhou, Hubei, Jiangxi, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Bhutan, Sikkim]. *Specimen: Yu Hong 28349.* Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Aletris laxiflora Bureau & Franch.

Distribution: China. Guizhou, Sichuan, E Xizang (Tibet), Yunnan. *Specimen: Yu Hong 2834.* Report based on Fang Zhendong, pers. obs. *Use(s):* none documented

Aletris pauciflora (Klotzsch) Hand.-Mazz.

Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Kashmir, N Myanmar (Burma), Nepal, Sikkim]. *Specimen: Fang Zhendong 251* (SABG). *Use(s):* medicinal, forage and/or fodder

Nyctaginaceae

Boerhavia L.

Boerhavia diffusa L.

Distribution: China. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Sichuan, S Taiwan, Yunnan [Cambodia, India, Indonesia, Japan (Ryukyu Islands), Laos, Malaysia, Myanmar (Burma), Nepal, the Philippines, Thailand, Vietnam; Africa, Americas, Australia, Pacific Islands]. *Specimen: Meili Team 26487* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Commicarpus Standl.

Commicarpus chinensis (L.) Heimerl

Distribution: China. Hainan, Yunnan [India, Indonesia, Malaysia, Myanmar (Burma), Pakistan, Thailand, Vietnam. *Specimen: Danica Anderson 37* (MO, SABG). *Use(s):* forage and/or fodder

Mirabilis L.

Mirabilis jalapa L.

Distribution: China. Cultivated and naturalized [cultivated and naturalized in tropical and warm temperate areas worldwide]. *Specimen: Wu Sugong et al. WB-024* (KUN). *Use(s):* forage and/or fodder.

Oleaceae

Chionanthus L.

Chionanthus retusus Lindl. & Paxton

Distribution: China. Fujian, Gansu, Guangdong, Hebei, Henan, Jiangxi, Shaanxi, Shanxi, Sichuan, Taiwan, Yunnan [Japan, Korea]. *Specimen: Meili Team 27225* (PYU, SABG). *Use(s):* food, ornamental.

Jasminum L.

Jasminum floridum Bunge

Distribution: China. Gansu, N Guizhou, Hebei, Henan, Hubei, Shaanxi, Shandong, Shanxi, Sichuan, Yunnan. *Specimen: George Yatskievych 04-152* (KUN, MO). *Use(s):* forage and/or fodder.

Jasminum humile L.

Distribution: China. Gansu, W Guizhou, SW Sichuan, Xizang (Tibet), Yunnan [Afghanistan, India, Tajikistan; SW Asia]. *Specimen: Meili Team 24785* (PYU, SABG). *Use(s):* medicinal.

Jasminum nudiflorum Lindl.

Distribution: China. Gansu, Shaanxi, Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 26665* (PYU, SABG). *Use(s):* food, medicinal, forage and/or fodder, fertilizer.

Jasminum officinale L.

Distribution: China. SW Guizhou, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Kashmir, Nepal, Tajikistan]. *Specimen: Meili Team 25175* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Jasminum subhumile W. W. Sm.

Distribution: China. SW Sichuan, Yunnan [India, Myanmar (Burma), Nepal]. *Specimen: Meili Team 27206* (PYU, SABG). *Use(s):* medicinal.

Ligustrum L.

Ligustrum compactum (Wall. ex G. Don) Hook. f. & Thomson ex Brandis

Distribution: China. Hubei, Sichuan, Xizang (Tibet), Yunnan [India, Nepal]. Specimen: *Danica M. Anderson, Jan Salick, Bee F. Gunn, Yin Xuezhen & Peiji* (MO, SABG). *Use(s):* medicinal, forage and/or fodder, firewood

Ligustrum gracile Rehder

Distribution: China. Sichuan, Yunnan. *Specimen: Meili Team 24715* (PYU, SABG). *Use(s):* none documented.

Ligustrum lucidum W. T. Aiton

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Xizang (Tibet), Yunnan, Zhejiang. *Specimen: Meili Team 25194* (PYU, SABG). *Use(s):* medicinal.

Syringa L.

Syringa pubescens Turcz.

Distribution: China. Gansu, Hebei, Henan, W & NW Hubei, Jilin, Liaoning, S Ningxia, E Qinghai, Shaanxi, W Shandong, Shanxi, NE Sichuan, Yunnan [Korea]. *Specimen: Meili Team 25195* (PYU, SABG). *Use(s):* none documented.

Syringa yunnanensis Franch.

Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25797* (PYU, SABG). *Use(s):* medicinal, ornamental, firewood.

Onagraceae

Chamerion (Raf.) Raf. ex Holub

Chamerion angustifolium (L.) Holub

Distribution: China. Gansu, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, India, Japan, Korea, Mongolia, Myanmar (Burma), Nepal, Pakistan, Russia; N Africa, C, N & SW Asia, Europe, North America]. *Specimen: Meili Team 26668* (PYU, SABG). *Use(s):* none documented.

Chamerion conspersum (Hausskn.) Holub

Distribution: China. Qinghai, Shaanxi, Sichuan, Xizang, Yunnan [Bhutan, NE India, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 26350* (PYU, SABG). *Use(s):* none documented.

Chamerion latifolium (L.) Holub

Distribution: China. Qinghai, Xinjiang, Xizang (Tibet), NW Yunnan [Afghanistan, Bhutan, India, Japan, Mongolia, Nepal, Pakistan, Russia, Tajikistan; Europe, North America]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Chamerion speciosum (Decne.) Holub

Distribution: China. Xizang (Tibet), Yunnan [India, Nepal, Pakistan]. *Specimen: Meili Team 26669* (PYU, SABG). *Use(s):* none documented.

Circaea L.

Circaea alpina L.

Distribution: China. Anhui, Gansu, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Jiangxi, Jilin, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [NE Afghanistan, Bhutan, India, Japan, Kazakhstan, Korea, Mongolia, N Myanmar (Burma), Nepal, Russia, Thailand, NW Vietnam, Europe, North America]. *Specimen: Meili Team 26161* (PYU, SABG). *Use(s):* medicinal.

Circaea erubescens Franch. & Sav.

Distribution: China. Anhui, Fujian, Guangdong, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shanxi, Sichuan, Taiwan, Yunnan, Zhejiang [Japan, S Korea]. *Specimen: Meili Team 26928* (PYU, SABG). *Use(s):* none documented.

Circaea repens Wall. ex Asch. & Magnus

Distribution: China. W Hubei, Sichuan, Xizang (Tibet), Yunnan [Bhutan, N India, Myanmar (Burma), Nepal, Pakistan]. *Specimen: Meili Team 25653* (PYU, SABG). *Use(s):* none documented.

Epilobium L.

Epilobium amurense Hausskn.

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangxi, Jilin, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Japan, Korea, Myanmar (Burma), Nepal, Pakistan, Russia]. *Specimen: Danica Anderson 194* (MO, SABG). *Use(s):* none documented.

Epilobium brevifolium D. Don

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guizhou, Henan, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Myanmar (Burma), Nepal, the Philippines, Vietnam]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Epilobium hirsutum L.

Distribution: China. Anhui, Gansu, Guangdong, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang [Afghanistan, India, Japan, Korea, Mongolia, Nepal, Pakistan, Russia; widespread in Africa, SW Asia, Europe, and naturalized in North America]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Epilobium royleanum Hausskn.

Distribution: China. Gansu, Guizhou, Henan, Hubei, Qinghai, Shaanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, India, Kashmir, Nepal, Pakistan; SW Asia]. *Specimen: Meili Team 26631* (PYU, SABG). *Use(s):* none documented.

Epilobium sikkimense Hausskn.

Distribution: China. Gansu, Qinghai, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, N India, Myanmar (Burma), Nepal, Sikkim]. Specimen: *Ruizi La Team 139* (MO, SABG). *Use(s):* none documented.

Epilobium sp. aff. ***subcoriaceum*** Hausskn.

Distribution: China. Gansu, Qinghai, Shaanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Jessica Woo, Ruth Sherman & Jan Salick 664* (MO, SABG). *Use(s):* none documented.

Orchidaceae

Calanthe R. Br.

Calanthe davidii Franch.

Distribution: China. S Gansu, Guizhou, Hubei, NW Hunan, S Shaanxi, Sichuan, Taiwan, SE Xizang (Tibet), SE & W Yunnan [Japan, Nepal, Vietnam]. *Specimen: Meili Team 25031* (PYU, SABG). *Use(s):* none documented.

Calanthe tricarinata Lindl.
Distribution: China. S Gansu, Guizhou, Hubei, S Shaanxi, Sichuan, Taiwan, SE Xizang (Tibet), Yunnan [Bhutan, NE India, Japan, Kashmir, Nepal]. *Specimen: Meili Team 24859* (PYU, SABG). *Use(s):* medicinal.

Calypso Salisb.

Calypso bulbosa (L.) Oakes
Distribution: China. Gansu, Jilin, Nei Mongol, NW Sichuan, Xizang (Tibet), NW Yunnan [Japan]. *Specimen: Meili Team 27303* (PYU, SABG). *Use(s):* none documented.

Cephalanthera Rich.

Cephalanthera longifolia (L.) Fritsch
Distribution: China. S Gansu, Guizhou, W Henan, W Hubei, S Shaanxi, S Shanxi, W Sichuan, S & SE Xizang (Tibet), NW Yunnan [Bhutan, India, Myanmar (Burma), Nepal, Pakistan; N Africa, SW Asia, Europe]. *Specimen: Meili Team 24873* (PYU, SABG). *Use(s):* none documented.

Coelogyne Lindl.

Coelogyne fimbriata Lindl.
Distribution: China. N Fujian, Guangdong, Guangxi, Hainan, S Jiangxi, SE Xizang (Tibet), Yunnan [Bhutan, Cambodia, NE India, Indonesia, Laos, NE Malaysia, Myanmar (Burma), Nepal, Thailand, Vietnam]. *Specimen: Meili Team 28340.* (PYU, SABG). *Use(s):* none documented.

Cymbidium Sw.

Cymbidium floribundum Lindl.
Distribution: China. N Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, E Sichuan, Taiwan, NW & SE Yunnan, Zhejiang. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Cymbidium hookerianum Rchb. f.
Distribution: China. S Guangxi, SW Guizhou, SW Sichuan, SE Xizang (Tibet), Yunnan [Bhutan, NE India, Nepal]. *Specimen: Jan Salick & Robert Moseley 9391* (SABG). *Use(s):* medicinal, ornamental.

Cymbidium tortisepalum Fukuy.
Distribution: China. Guizhou, Sichuan, Taiwan, Yunnan [widely cultivated]. Report based on Fang Zhendong, pers. obs. *Use(s):* ornamental.

Cypripedium L.

Cypripedium flavum P. F. Hunt & Summerh.
Distribution: China. S Gansu, W Hubei, Sichuan, SE Xizang (Tibet), NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Cypripedium plectrochilum Franch.
Distribution: China. W Hubei, W Sichuan, SE Xizang (Tibet), C to NW Yunnan [Myanmar (Burma)]. *Specimen: Meili Team 25423* (PYU, SABG). *Use(s):* none documented.

Cypripedium tibeticum King ex Rolfe
Distribution: China. S Gansu, W Guizhou, W Sichuan, E to S Xizang (Tibet), W Yunnan [Bhutan, India, Sikkim]. *Specimen: Meili Team 25600* (PYU, SABG). *Use(s):* medicinal.

Dendrobium Sw.

Dendrobium moniliforme (L.) Sw.
Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Henan, Hunan, Jiangxi, Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang [NE India, Japan, Korea]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Epipactis Zinn

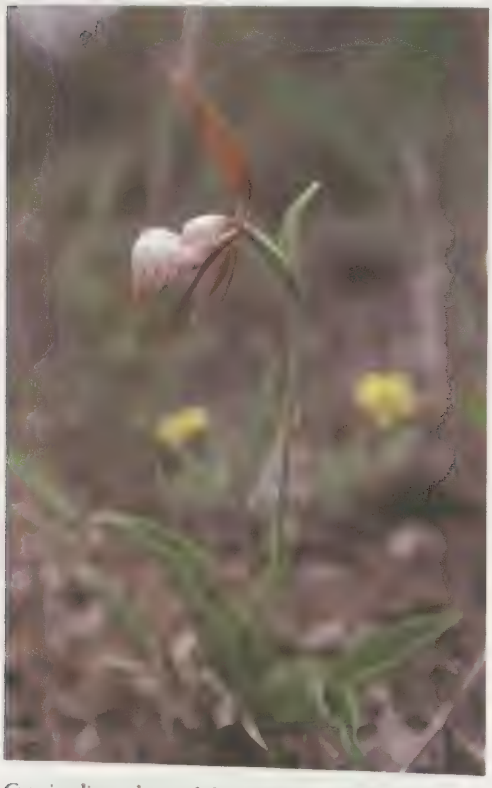
Epipactis helleborine (L.) Crantz
Distribution: China. Anhui, Gansu, Guizhou, Hebei, Hubei, Liaoning, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, Kazakhstan, Krygyzstan, Nepal, Pakistan, Russia, Tajikistan, Uzbekistan; N Africa, SW Asia; Europe, North America]. *Specimen: Meili Team 25702* (PYU, SABG). *Use(s):* medicinal.

Goodyera R. Br.

Goodyera henryi Rolfe
Distribution: China. S Gansu, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [Japan, Korea]. *Specimen: Meili Team 25296* (PYU, SABG). *Use(s):* none documented.

Goodyera repens (L.) R. Br.
Distribution: China. Anhui, N Fujian, Gansu,

Hebei, Heilongjiang, Henan, Hubei, Hunan, Jilin, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan [Bhutan, India, Japan, Korea, Myanmar (Burma), Russia; Europe, North America]. *Specimen: Meili Team 24851* (PYU, SABG). *Use(s):* medicinal.



Cypripedium plectrochilum. Photograph by Robert Moseley.

Cypripedium tibeticum. Photograph by Robert Moseley.

Goodyera schlechtendaliana Rchb. f.

Distribution: China. Anhui, N Fujian, S Gansu, Guangdong, Guangxi, Guizhou, Hainan, S Henan, Hubei, Hunan, Jiangsu, Jiangxi, S Shaanxi, Shanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Indonesia, Japan, Korea, Nepal, Thailand, Vietnam]. *Specimen: Meili Team 27412* (PYU, SABG). *Use(s):* medicinal.

Gymnadenia R. Br.

Gymnadenia orchidis Lindl.

Distribution: China. SE Gansu, W Hubei, S Qinghai, S Shaanxi, W Sichuan, E to S Xizang (Tibet), NW Yunnan [Bhutan, NE India, Kashmir, Nepal, Pakistan]. *Specimen: Meili Team 26016* (PYU, SABG). *Use(s):* medicinal.

Habenaria Willd.

Habenaria aitchisonii Rchb. f. ex Aitch. & Hemsl.

Distribution: China. Guizhou, S Qinghai, W Sichuan, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, India, Kashmir]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented

Habenaria glaucifolia Bureau & Franch.

Distribution: China. S Gansu, Guizhou, S Shaanxi, W Sichuan, SE Xizang (Tibet), Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Herminium L.

Herminium chloranthum T. Tang & F. T. Wang

Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Jessica Woo & Ruth Sherman 423* (SABG). *Use(s):* none documented.

Herminium monorchis (L.) R. Br.

Distribution: China. Anhui, Gansu, Guangdong, Hebei, Heilongjiang, Henan, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xizang (Tibet), N & NW Yunnan [India, Japan, Korea, Mongolia, Nepal, Pakistan, Sikkim; C & W Asia, Europe]. *Specimen: Danica Anderson, Ruth Sherman & Senadorji 23* (SABG). *Use(s):* medicinal.

Neottia Guett.

Neottia listeroides Lindl.

Distribution: China. Gansu, Shanxi, Sichuan,

Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Pakistan]. *Specimen: Meili Team 25312* (PYU, SABG). *Use(s):* none documented.

Neottia wardii (Rolfe) Szlach. (syn. *Listeria grandiflora* Rolfe)

Distribution: China (SW). Yunnan. *Specimen: Meili Team 24988* (PYU, SABG). *Use(s):* medicinal.

Neottianthe (Rchb.) Schltr.

Neottianthe cucullata (L.) Schltr.

Distribution: China. Anhui, N Fujian, Gansu, NE Guizhou, Hebei, Heilonjiang, Henan, W Hubei, Hunan, Jiangxi, Jilin, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), NW Yunnan, Zhejiang [Bhutan, N India, Japan, Korea, Mongolia, Nepal, Russia; E Europe]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Oreorchis Lindl.

Oreorchis chusua D. Don

Distribution: China. Yunnan [Russia; Europe, North America]. *Specimen: Jessica Woo & Ruth Sherman 428* (SABG). *Use(s):* none documented.

Oreorchis diantha Schltr.

Distribution: China. Yunnan, [Japan]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Oreorchis foliosa (Lindl.) Lindl.

Distribution: China. Yunnan [Bhutan]. *Specimen: Meili Team 24982* (PYU, SABG). *Use(s):* medicinal.

Phaius Lour.

Phaius delavayi (Finet) P. J. Cribb & Perner

Distribution: China. S Gansu, SE to W Sichuan, SE Xizang (Tibet), SW Yunnan. *Specimen: Meili Team 25511* (PYU, SABG). *Use(s):* none documented.

Pleione D. Don

Pleione scopulorum W. W. Sm.

Distribution: China. Xizang (Tibet), Yunnan [India, Myanmar (Burma)]. *Specimen: Meili Team 25735* (PYU, SABG). *Use(s):* none documented.

Orobanchaceae

Boschniakia C. A. May. ex Bong

Boschniakia himalaica Hook. f. & Thomson

Distribution: Gansu, Hubei, Qinghai, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Kashmir]. *Specimen: George Yatskievych, Deng Zhiwei, Liqing Wangcuo & Sila Lamu 04-067* (KUN, MO). *Use(s):* medicinal.

Orobanche L.

Orobanche coerulescens Stephan

Distribution: China. Gansu, Hebei, Heilongjiang, Hubei, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Japan, Kazakhstan, Korea, Kyrgyzstan, Mongolia, Nepal, Russia, Turkmenistan; Europe]. *Specimen: Wu Sugong et al. WB-159* (KUN). *Use(s):* none documented.

Pedicularis L.

Pedicularis aloensis Hand.-Mazz.

Distribution: China. NW Yunnan. *Specimen: Meili Team 26919* (PYU, SABG). *Use(s):* medicinal.

Pedicularis anas Maxim.

Distribution: China. S & SW Gansu, N & W Sichuan, E Xizang (Tibet), Yunnan. *Specimen: Jan Salick & Sonam Dorje 9622* (MO, SABG). *Use(s):* medicinal.

Pedicularis aurata (Bonati) H. L. Li

Distribution: China. SE Xizang (Tibet), NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Pedicularis axillaris Franch. ex Maxim.

Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Zhang Canming 89-093* (SABG). *Use(s):* medicinal.

Pleione scopulorum. Photograph by Robert Moseley.

Pedicularis cephalantha Franch. ex Maxim.
Distribution: China. S Sichuan, NW Yunnan. *Specimen: Jan Salick & Sonam Dorje 9623* (MO, SABG). *Use(s):* medicinal.

Pedicularis confertiflora Prain
Distribution: China. SW Sichuan, S Xizang (Tibet), Yunnan [Bhutan, Nepal, Sikkim]. *Specimen: Meili Team 26578* (PYU, SABG). *Use(s):* medicinal.

Pedicularis cristatella Pennell & H. L. Li
Distribution: China. SW Gansu, N Sichuan, Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Pedicularis debilis Franch. ex Maxim.
Distribution: China. NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Pedicularis densispica Franch. ex Maxim.
Distribution: China. W Sichuan, S & SE Xizang (Tibet), NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Pedicularis elwesii Hook. f.
Distribution: China. E, S & SE Xizang (Tibet), NW Yunnan [Bhutan, N Myanmar (Burma), Nepal, Sikkim]. *Specimen: Fang Zhendong 1730* (SABG). *Use(s):* medicinal.

Pedicularis gyrorhyncha Franch. ex Maxim.
Distribution: China. NW Yunnan. *Specimen: Meili Team 26354* (PYU, SABG). *Use(s):* none documented.

Pedicularis insignis Bonati
Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Jan Salick et al. 9528* (MO, SABG). *Use(s):* none documented.

Pedicularis lachnoglossa Hook. f.
Distribution: China. W Sichuan, S & SE Xizang (Tibet), NW Yunnan [Bhutan, E Nepal, Sikkim]. *Specimen: Jan Salick et al. 9526* (SABG). *Use(s):* none documented.

Pedicularis likiangensis Franch. ex Maxim.
Distribution: China. SW Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 26603* (PYU, SABG). *Use(s):* none documented.

Pedicularis longiflora Rudolph
Distribution: China. Gansu, Hebei, Nei Mongol, Qinghai, W Sichuan, SE Xizang (Tibet), NW Yunnan [India, Kazakhstan, Kyrgyzstan, Mongolia, Nepal, Pakistan, Russia, Sikkim, Tajikistan, Turkmenistan, Uzbekistan]. *Specimen: Fang Zhendong 180* (SABG). *Use(s):* medicinal.

Pedicularis macrosiphon Franch.
Distribution: China. NW Sichuan, NW Yunnan. *Specimen: Meili Team 24816* (PYU, SABG). *Use(s):* medicinal

Pedicularis mayana Hand.-Mazz.
Distribution: China. NW Yunnan. *Specimen: Jan Salick et al. 9645* (MO, SABG). *Use(s):* none documented.

Pedicularis monbeigiana Bonati
Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Meili Team 28011* (PYU, SABG). *Use(s):* none documented.

Pedicularis neolatituba Tsoong
Distribution: China. N Sichuan, Yunnan. *Specimen: Meili Team 25913* (PYU, SABG). *Use(s):* none documented

Pedicularis oederi Vahl
Distribution: China. Gansu, Hebei, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Bhutan, Japan, Kazakhstan, Kyrgyzstan, Mongolia, Russia, Tajikistan; C & N Europe, N North America]. *Specimen: Meili Team 25914* (PYU, SABG)

Pedicularis praeruptorum Bonati
Distribution: China. NW Yunnan. *Specimen: Fang Zhendong 244* (SABG). *Use(s):* none documented.

Pedicularis pseudocephalantha Bonati
Distribution: China. NW Yunnan. *Specimen: Meili Team 26364* (PYU, SABG). *Use(s):* none documented.

Pedicularis pseudomelampyriflora Bonati
Distribution: China. NW Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 26692* (PYU, SABG).

Pedicularis pseudoversicolor Hand.-Mazz.
Distribution: China. S Xizang (Tibet), NW Yunnan [Bhutan]. *Specimen: Fang Zhendong 1213* (SABG). *Use(s):* none documented

Pedicularis ramosissima Bonati
Distribution: China. SW Sichuan, Yunnan.

Specimen: Meili Team 26641 (PYU, SABG). *Use(s):* none documented.

Pedicularis rex C. B. Clarke ex Maxim.
Distribution: China. Guizhou, Hubei, Sichuan, Xizang (Tibet), Yunnan [India, Myanmar (Burma)]. *Specimen: Meili Team 26684* (PYU, SABG). *Use(s):* none documented.

Pedicularis rhinanthoides Schrenk ex Fisch. & C. A. Mey.
Distribution: China. Gansu, Hebei, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [India, Kazakhstan, Kyrgyzstan, Mongolia, Russia, Tajikistan]. *Specimen: Fang Zhendong 1670* (SABG). *Use(s):* none documented.

Pedicularis rhodotricha Maxim.
Distribution: China. W Sichuan, NW Yunnan. *Specimen: Fang Zhendong 188* (SABG). *Use(s):* none documented.

Pedicularis roylei Maxim.
Distribution: China. SW Sichuan, E & SE Xizang (Tibet), NW Yunnan [Afghanistan, Bhutan, India, Kashmir]. *Specimen: Fang Zhendong 1669* (SABG). *Use(s):* none documented.

Pedicularis rupicola Franch. ex Maxim.
Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 26518* (PYU, SABG). *Use(s):* none documented.

Pedicularis salviiflora Franch.
Distribution: China. Sichuan, NW Yunnan. *Specimen: Jessica Woo, Ruth Sherman & Jan Salick 585* (MO, SABG). *Use(s):* none documented.

Pedicularis siphonantha D. Don
Distribution: China. W Sichuan, S & SE Xizang (Tibet), NW Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Meili Team 26422* (PYU, SABG). *Use(s):* none documented.

Pedicularis superba Franch. ex Maxim.
Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Danica Anderson, Jan Salick & Peiji 176* (MO, SABG). *Use(s):* tools.

Pedicularis tenacifolia Tsoong
Distribution: China. SE Xizang (Tibet), Yunnan. *Specimen: Fang Zhendong 243* (SABG). *Use(s):* none documented.

Pedicularis tenuisecta Franch. ex Maxim
Distribution: China. W Guizhou, SW Sichuan, NW Yunnan [Laos]. *Specimen: Meili Team 18143* (PYU, SABG). *Use(s):* none documented.

Pedicularis thamnophila (Hand.-Mazz.) H. L. Li
Distribution: China. SW & W Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Zhu Weiming 17210* (SABG). *Use(s):* none documented.

Pedicularis trichoglossa Hook. f.
Distribution: China. Qinghai, W Sichuan, S & SE Xizang (Tibet), NW Yunnan [Bhutan, India, N Myanmar (Burma), Nepal, Sikkim]. *Specimen: Fang Zhendong 1716* (SABG). *Use(s):* medicinal.

Pedicularis tsaii H. L. Li
Distribution: China. NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Pedicularis tsekouensis Bonati
Distribution: China. SW Sichuan, NW Yunnan [N Myanmar (Burma)]. *Specimen: Jessica Woo, Ruth Sherman & Jan Salick 677* (MO, SABG). *Use(s):* forage and/or fodder.

Pedicularis verbenifolia Franch. ex Maxim.
Distribution: China. S Sichuan, NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Pedicularis rhinanthoides. Photograph by Fang Zhendong.

Pedicularis vialii Franch.

Distribution: China. W Sichuan, SE Xizang (Tibet), NW Yunnan [N Myanmar (Burma)]. *Specimen: Meili Team 25785* (PYU, SABG). *Use(s):* none documented.

Pedicularis yunnanensis Franch. ex Maxim.

Distribution: China. NW Yunnan. *Specimen: Meili Team 26598* (PYU, SABG). *Use(s):* none documented.

Phtheirospermum Bunge ex Fisch. & C. A. Mey.

Phtheirospermum tenuisectum Bureau & Franch.

Distribution: China. Guizhou, Qinghai, Sichuan, Xizang (Tibet), Yunnan [Bhutan]. *Specimen: Meili Team 26376* (PYU, SABG). *Use(s):* medicinal

Oxalidaceae

Oxalis L.

Oxalis acetosella L.

Distribution: China. Heilongjiang, Jilin, Liaoning, Ningxia, Xinjiang, Yunnan [Japan, Korea, Mongolia, Nepal, Pakistan, Russia; Europe, Americas]. *Specimen: Meili Team 25330* (PYU, SABG). *Use(s):* medicinal.

Oxalis corniculata L.

Distribution: China. Anhui, Chongqing, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Nei Mongol, E Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Japan, Korea, Malaysia, Myanmar (Burma), Nepal, Pakistan, Russia, Thailand; naturalized almost worldwide]. *Specimen: Meili Team 25095* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Oxalis griffithii Edgew. & Hook. f.

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Japan, Kashmir, Korea, N Myanmar (Burma), Nepal, the Philippines]. *Specimen: Peng Shengjing 8* (PYU, SABG). *Use(s):* medicinal.

Oxalis stricta L.

Distribution: China. Guangxi, Hebei, Henan, Hubei, Jiangxi, Jilin, Liaoning, Shanxi, Yunnan, Zhejiang [Japan, Korea, SE Russia; North America, introduced in Europe]. *Specimen: Danica Anderson, Ruth Sherman & Senajorji 74* (MO, SABG). *Use(s):* none documented.

Paeoniaceae

Paeonia L.

Paeonia anomala L.

Distribution: China. C & S Gansu, S Ningxia, E Qinghai, S Shaanxi, N Shanxi, W Sichuan, N Xinjiang, E Xizang (Tibet), Yunnan [NE Kazakhstan, N Mongolia, Russia (NE Europe, Siberia)]. *Specimen: Wu Sugong et al. WB-071* (KUN). *Use(s):* medicinal

Paeonia delavayi Franch.

Distribution: China. W Sichuan, SE Xizang (Tibet), C & N Yunnan. *Specimen: Meili Team 25211* (PYU, SABG). *Use(s):* medicinal, ornamental

Papaveraceae

Corydalis DC.

Corydalis adunca Maxim.

Distribution: China. Gansu, Nei Mongol, Ningxia, Qinghai, Shaanxi, W Sichuan, Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 26162* (PYU, SABG). *Use(s):* medicinal.

Corydalis appendiculata Hand.-Mazz.

Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Wu Sugong et al. WB-074* (KUN). *Use(s):* none documented.

Paeonia delavayi. Photograph by Robert Moseley

Corydalis atuntsuensis W. W. Sm.
Distribution: China. S Qinghai, W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Bee Gunn & Wayne Law 143* (MO, SABG). *Use(s):* none documented.

Corydalis benecincta W. W. Sm.
Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Bee Gunn, Fang Zhendong, Danica Anderson & Wayne Law 110* (MO, SABG). *Use(s):* none documented.

Corydalis bimaculata C. Y. Wu & Z. Y. Su
Distribution: China. C & E Xizang (Tibet), Yunnan. *Specimen: Fang Zhendong 1674* (SABG). *Use(s):* medicinal.

Corydalis calcicola W. W. Sm.
Distribution: China. SW & W Sichuan, NW Yunnan. *Specimen: Meili Team 26438* (PYU, SABG). *Use(s):* medicinal.

Corydalis corymbosa C. Y. Wu & Z. Y. Su
Distribution: China. E Xizang (Tibet), NW Yunnan. *Specimen: Jan Salick & Sonam Dorje 9618* (MO, SABG). *Use(s):* medicinal.

Corydalis curviflora Maxim.
Distribution: China. SW Gansu, Ningxia, E & S Qinghai, N & NW Sichuan, Yunnan. *Specimen: Bee Gunn & Wayne Law 144* (MO, SABG). *Use(s):* none documented

Corydalis delavayi Franch.
Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Meili Team 27519* (PYU, SABG). *Use(s):* medicinal.

Corydalis delphinioides Fedde
Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Meili Team 26838* (PYU, SABG). *Use(s):* none documented.

Corydalis densispica C. Y. Wu
Distribution: China. SW Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Jan Salick, Robert Moseley & Heidi H. Schmidt 9572* (MO, SABG). *Use(s):* medicinal, forage and/or fodder.

Corydalis eugeniae Fedde
Distribution: China. NW & W Sichuan, NW Yunnan. *Specimen: Meili Team 26538* (PYU, SABG). *Use(s):* medicinal

Corydalis flaccida Hook. f. & Thomson
Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan [Bhutan, India, Sikkim, Myanmar (Burma), Nepal]. *Specimen: Meili Team 24747* (PYU, SABG). *Use(s):* none documented.

Corydalis glaucissima Lidén & Z. Y. Su
Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Fang Zhendong 1673* (SABG). *Use(s):* none documented.

Corydalis gracillima C. Y. Wu ex Govaerts
Distribution: China. W Sichuan, SE Xizang (Tibet), Yunnan [N Myanmar (Burma)]. *Specimen: Jan Salick, Robert Moseley & Heidi H. Schmidt 9570* (MO, SABG). *Use(s):* none documented.

Corydalis hemidicentra Hand.-Mazz.
Distribution: China. SE Xizang (Tibet), NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Corydalis hepaticifolia C. Y. Wu & Z. Y. Su
Distribution: SE Xizang (Tibet), Yunnan. *Specimen: Bee Gunn & Wayne Law 119* (MO, SABG). *Use(s):* none documented.

Corydalis kokiana Hand.-Mazz.
Distribution: China. W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 26805* (PYU, SABG). *Use(s):* medicinal.

Corydalis mayae Hand.-Mazz.
Distribution: China. SE Xizang (Tibet), NW Yunnan [Myanmar (Burma)]. *Specimen: Meili Team 25973* (PYU, SABG). *Use(s):* none documented.

Corydalis meifolia Wall.
Distribution: China. S Xizang (Tibet), Yunnan [Bhutan, N India, Nepal, Pakistan]. Report

Corydalis hemidicentra. Photograph by Fang Zhendong.

based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Corydalis melanochlora Maxim.
Distribution: China. Gansu, Qinghai, W Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 27520* (PYU, SABG). *Use(s):* medicinal.

Corydalis ophiocarpa Hook. f. & Thomson
Distribution: China. Anhui, Gansu, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangxi, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Bhutan, India, Japan, Sikkim]. *Specimen: Meili Team 25036* (PYU, SABG). *Use(s):* medicinal.

Corydalis oxypetala Franch.
Distribution: China. NW Yunnan. *Specimen: Meili Team 26259* (PYU, SABG). *Use(s):* none documented.

Corydalis pachypoda (Franch.) Hand.-Mazz.
Distribution: China. NW Yunnan. *Specimen: Meili Team 26321* (PYU, SABG). *Use(s):* medicinal.

Corydalis petrophila Franch.
Distribution: China. E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25297* (PYU, SABG). *Use(s):* medicinal.

Corydalis polyphylla Hand.-Mazz.
Distribution: China. E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25972* (PYU, SABG) *Use(s):* medicinal.

Corydalis pseudoadoxa (C. Y. Wu & H. Chuang) C. Y. Wu & H. Chuang
Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Fang Zhendong 239* (SABG). *Use(s):* none documented.

Corydalis pseudofluminicola Fedde
Distribution: China. NC & W Sichuan, Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Corydalis radicans Hand.-Mazz.
Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Liu Lin 11* (SABG). *Use(s):* none documented.

Corydalis rupifraga C. Y. Wu & Z. Y. Shu
Distribution: China. NW Yunnan. *Specimen: Fang Zhendong 233* (SABG). *Use(s):* none documented.

Corydalis stracheyi Duthie ex Prain
Distribution: China. S Xizang (Tibet), NW Yunnan [Bhutan, N India, Nepal, Sikkim]. *Specimen: Bee Gunn & Wayne Law 130* (MO, SABG). *Use(s):* none documented.

Corydalis taliensis Franch.
Distribution: China. W Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Corydalis trachycarpa Maxim.
Distribution: China. Gansu, Qinghai, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25786* (PYU, SABG). *Use(s):* medicinal.

Corydalis trifoliata Franch.
Distribution: China. SE Xizang (Tibet), W Yunnan [Bhutan, India, N Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 24736* (PYU, SABG). *Use(s):* medicinal.

Corydalis yunnanensis Franch.
Distribution: China. SW Sichuan, N & NW Yunnan. *Specimen: Meili Team 27430* (PYU, SABG). *Use(s):* none documented.

Dactylicapnos Wall.

Dactylicapnos scandens (D. Don) Hutch.
Distribution: China. W Guangxi, S Xizang (Tibet), S Yunnan [Bhutan, India, Myanmar (Burma), Nepal, Sikkim, Sri Lanka, N Thailand, N Vietnam]. *Specimen: Meili Team 26090* (PYU, SABG). *Use(s):* medicinal.

Meconopsis Vig.

Meconopsis concinna Prain
Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Jan Salick et al. 9560* (MO, SABG). *Use(s):* none documented.

Meconopsis horridula Hook. f. & Thomson
Distribution: China. W Gansu, Qinghai, W Sichuan, Xizang (Tibet), Yunnan [Bhutan, NE India, N Myanmar (Burma), Nepal]. *Specimen: Bee Gunn 112* (MO, SABG). *Use(s):* medicinal.

Meconopsis impedita Prain
Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan [NE Myanmar (Burma)]. *Specimen: Meili Team 25897* (PYU, SABG). *Use(s):* medicinal.

Meconopsis integrifolia (Maxim.) Franch.
Distribution: China. SW Gansu, E & S Qinghai, W Sichuan, E & S Xizang (Tibet), NE & NW

Yunnan [NE Myanmar (Burma)]. *Specimen: Meili Team 25581* (PYU, SABG). *Use(s):* medicinal.

Meconopsis lancifolia (Franch.) Franch. ex Prain
Distribution: China. Gansu, Sichuan, Xizang (Tibet), Yunnan [Myanmar (Burma)]. *Specimen: Heidi H. Schmidt et al. 4105* (MO, PYU). *Use(s):* medicinal.

Meconopsis lyrata (H. A. Cummins & Prain) Fedde ex Prain
Distribution: China. S Xizang (Tibet), NW Yunnan [Bhutan, India, Sikkim, Nepal]. *Specimen: Jan Salick & Sonam Dorje 9608* (MO, SABG). *Use(s):* none documented

Meconopsis napaulensis DC.
Distribution: China. S Xizang (Tibet), Yunnan [Bhutan, NE India, Nepal]. *Specimen: Wayne Law, Yang Yongping, Anthony Amend, Peng Shengjing & Sun Hongyan 124* (MO, SABG). *Use(s):* medicinal

Meconopsis racemosa Maxim
Distribution: China. S Gansu, E & S Qinghai, Shaanxi, NW & W Sichuan, Xizang (Tibet), NW Yunnan. *Specimen: Heidi Schmidt et al. 4104* (MO, SABG). *Use(s):* medicinal

Meconopsis speciosa Prain
Distribution: China. W Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Fang Zhendong 198* (SABG). *Use(s):* medicinal

Papaver L.

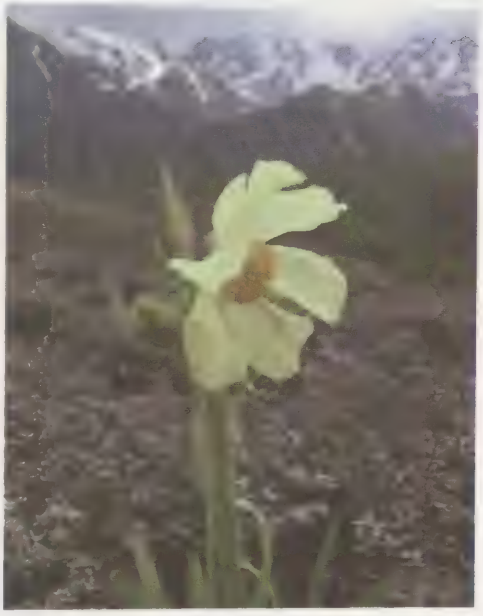
Papaver somniferum L.
Distribution: China. Widely cultivated [cultivated worldwide]. *Specimen: Fang Zhendong 233* (SABG). *Use(s):* medicinal

Phyllanthaceae

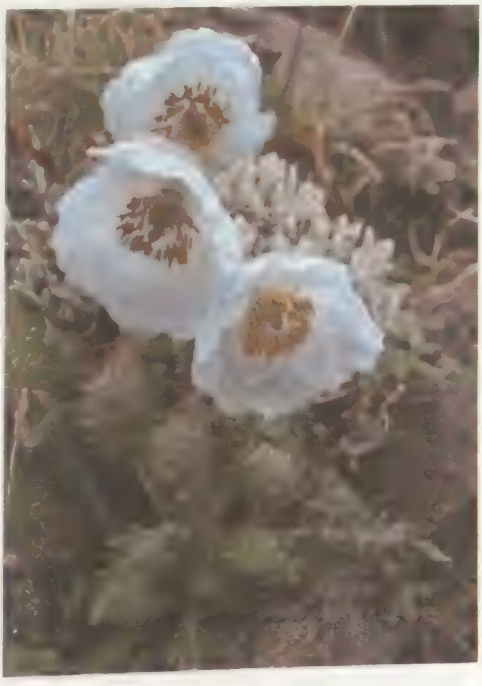
Flueggea Willd.

Flueggea suffruticosa (Pall.) Baill.
Distribution: China. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Shandong, Shanxi, Sichuan, Taiwan, Yunnan, Zhejiang [Japan, Korea, Mongolia, Russia]. *Specimen: Meili Team 24813* (PYU, SABG). *Use(s):* none documented

Leptopus Decne.



Meconopsis integrifolia. Photograph by Robert Moseley.



Meconopsis speciosa. Photograph by Robert Moseley.

Leptopus chinensis (Bunge) Pojark.
Distribution: China. Gansu, Guangxi, Guizhou, Hainan, Hebei, Henan, Hubei, Hunan, Jiangsu,

Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan [Georgia, Iran, Myanmar (Burma), Pakistan, Russia]. *Specimen: George Yatskievych 04-023* (KUN, MO). *Use(s):* none documented.

Phytolaccaceae

Phytolacca L.

Phytolacca acinosa Roxb.

Distribution: China. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Jiangsu, Liaoning, Shaanxi, Shandong, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Japan, Korea, Myanmar (Burma), Sikkim, Vietnam]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Phytolacca polyandra Batalin

Distribution: China. Gansu, Guangxi, Guizhou, Sichuan, Yunnan. *Specimen: Meili Team 24876* (PYU, SABG). *Use(s):* medicinal.

Pittosporaceae

Pittosporum Banks ex Gaertn.

Pittosporum angustilimbum C. Y. Wu

Distribution: China. NW Yunnan. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn, Yin Xuezhen & Peiji 256* (MO, SABG). *Use(s):* handcrafts, forage and/or fodder.

Pittosporum brevicalyx (Oliv.) Gagnep.

Distribution: China. Guangdong, Guangxi, Guizhou, W Hubei, Hunan, Jiangxi, Sichuan, SE Xizang (Tibet), Yunnan. *Specimen: Meili Team 27246* (PYU, SABG). *Use(s):* medicinal.

Pittosporum heterophyllum Franch.

Distribution: China. Sichuan, SE Xizang (Tibet), N Yunnan. *Specimen: Danica Anderson 103* (MO, SABG). *Use(s):* none documented.

Plantaginaceae

Hemiphragma Wall.

Hemiphragma heterophyllum Wall.

Distribution: China. Gansu, Guangxi, Guizhou Hubei, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Bhutan, India, Indonesia, Nepal, the Philippines, Sikkim]. *Specimen: Meili Team 25014* (PYU, SABG). *Use(s):* medicinal.

Lagotis Gaertn.

Lagotis alutacea W. W. Sm.

Distribution: China. SW to W Sichuan, NW Yunnan. *Specimen: Fang Zhendong 165* (SABG). *Use(s):* medicinal.

Lagotis integra W. W. Sm.

Distribution: China. S Qinghai, W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: G. Forrest 14422* (E, type not seen). *Use(s):* medicinal.

Lagotis praecox W. W. Sm.

Distribution: China. W Sichuan, NW Yunnan. *Specimen: Meili Team 26543* (PYU, SABG). *Use(s):* medicinal.

Lagotis wardii W. W. Sm.

Distribution: China. SE Xizang (Tibet), Yunnan. *Specimen: Yang Jinsheng 8828* (YIM). *Use(s):* medicinal.

Neopicrorhiza D. Y. Hong

Neopicrorhiza scrophulariiflora (Pennell) D. Y. Hong

Distribution: China. W Sichuan, S Xizang (Tibet), NW Yunnan [Bhutan, Nepal, Sikkim]. *Specimen: Fang Zhendong 86001* (SABG). *Use(s):* medicinal.

Plantago L.

Plantago depressa Willd.

Distribution: China. Anhui, Gansu, Guangdong, Hebei, Henan, Heilongjiang, Hubei, Jiangsu, Jiangxi, Jilin, Liaoning, E Nei Mongol, Ningxia, Qinghai, Shandong, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, India, Kashmir, Kazakhstan, Korea, Mongolia, Pakistan, E Russia]. *Specimen: Danica Anderson 52* (MO, SABG). *Use(s):* medicinal.

Plantago major L.

Distribution: China. Anhui, Chongqing, Fujian, Gansu, Guangxi, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jilin, Liaoning, Nei Mongol, Qinghai, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan [naturalized worldwide]. *Specimen: Danica Anderson, Jan Salick & Peiji 168* (MO, SABG). *Use(s):* medicinal, forage and/or fodder.

Veronica L.

Veronica ciliata Fisch.

Distribution: China. Gansu, Nei Mongol,

Ningxia, Qinghai, Shaanxi, NW to W Sichuan, Xinjiang, Xizang (Tibet), Yunnan [NW India, Kashmir, Kazakhstan, Kyrgyzstan, Mongolia, Nepal, Pakistan, Russia, Sikkim, Tajikistan]. *Specimen: Meili Team 26711* (PYU, SABG). *Use(s):* medicinal.

Veronica persica Poir.

Distribution: China. Anhui, Fujian, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Taiwan, W Xinjiang, E Xizang (Tibet), Yunnan, Zhejiang [naturalized worldwide]. *Specimen: Meili Team 25234* (PYU, SABG). *Use(s):* medicinal.

Veronica serpyllifolia L.

Distribution: China. Gansu, Guizhou, Hubei, Hunan, Liaoning, Shaanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [naturalized worldwide]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Veronica szechuanica Batalin

Distribution: China. SE Gansu, W Hubei, E Qinghai, S Shaanxi, Sichuan, S Xizang (Tibet), NW Yunnan [Bhutan, NW India, Sikkim]. *Specimen: Danica Anderson, Jan Salick & Peiji 177* (MO, SABG). *Use(s):* none documented.

Plumbaginaceae

Ceratostigma Bunge

Ceratostigma minus Stapf ex Prain

Distribution: China. S Gansu, W Sichuan, E & S Xizang (Tibet), N Yunnan. *Specimen: Meili Team 27845* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Poaceae

Achnatherum P. Beauv.

Achnatherum jacquemontii (Jaub. & Spach) P. C. Kuo & S. L. Lu

Distribution: China. Xizang (Tibet), Yunnan [E Afghanistan, NW India, Kashmir, N Pakistan]. *Specimen: George Yatskievych 04-151* (KUN, MO). *Use(s):* none documented.

Achnatherum sibiricum (L.) Keng ex Tzvelev

Distribution: China. Heilongjiang, Henan, Nei Mongol, Ningxia, Qinghai, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Kazakhstan, Kyrgyzstan, Mongolia, Russia, Uzbekistan]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Agrostis L.

Agrostis brevipes Keng ex J. L. Yang

Distribution: China. Sichuan, Xizang (Tibet), Yunnan. Report based on Fang Zhendong, pers. obs. Use(s): none documented.

Agrostis hookeriana C. B. Clarke ex Hook. f.

Distribution: China. Qinghai, W Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Meili Team 26134* (PYU, SABG). *Use(s):* none documented.

Agrostis hugoniana Rendle

Distribution: China. Gansu, Qinghai, W Shaanxi, NW Sichuan, Yunnan. *Specimen: Meili Team 26937* (PYU, SABG). *Use(s):* none documented.

Agrostis nervosa Nees ex Trin.

Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, N Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 28335* (PYU, SABG). *Use(s):* none documented.

Agrostis sinorupestris L. Liou ex S. M. Phillips & S. L. Lu

Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26201B* (PYU, SABG). *Use(s):* none documented.

Agrostis sozanensis Hayata

Distribution: China. Anhui, Fujian, Guangdong, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang. *Specimen: Danica Anderson, Jan Salick & Peiji 175* (MO, SABG). *Use(s):* none documented.

Andropogon L.

Andropogon munroi C. B. Clarke

Distribution: China. Sichuan, S Xizang (Tibet), Yunnan [Bhutan, N India, Nepal, Pakistan]. *Specimen: Danica Anderson 50* (MO, SABG). *Use(s):* forage and/or fodder.

Arthraxon P. Beauv.

Arthraxon prionodes (Steud.) Dandy

Distribution: China. Anhui, Beijing, Henan,

Hubei, Jiangsu, Shaanxi, Shandong, Sichuan, Xizang (Tibet), Yunnan, Zhejiang [Afghanistan, Bhutan, India, Myanmar (Burma), Pakistan, Thailand, Vietnam; E Africa, SW Asia]. *Specimen: George Yatskievych 04-113* (KUN, MO). *Use(s):* religious, forage and/or fodder.

Avena L.

Avena fatua L.

Distribution: China. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Nei Mongol, Ningxia, Qinghai, Shaanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang [cultivated and naturalized worldwide]. *Specimen: George Yatskievych 04-156* (KUN, MO). *Use(s):* food.

Bothriochloa Kuntze

Bothriochloa bladhii (Retz.) S. T. Blake

Distribution: China. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Shaanxi, Sichuan, Taiwan, Xinjiang, Yunnan [Bhutan, India, Indonesia, Japan, Malaysia, Nepal, New Guinea, Pakistan, Thailand, Vietnam; Africa, SW Asia, Australia, introduced in America]. *Specimen: Danica Anderson 17* (MO, SABG). *Use(s):* forage and/or fodder.

Brachiaria (Trin.) Griseb.

Brachiaria subquadripara (Trin.) Hitchc.

Distribution: China. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Taiwan, Yunnan [tropical Asia, Australia, Pacific Islands]. *Specimen: Meili Team 26750* (PYU, SABG). *Use(s):* none documented.

Brachypodium P. Beauv.

Brachypodium sylvaticum (Huds.) P. Beauv.

Distribution: China. Anhui, Gansu, Guizhou, Jiangsu, Liaoning, Qinghai, Shaanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, N India, Indonesia, Japan, Kyrgyzstan, Nepal, Pakistan, the Philippines, Russia, Tajikistan, Turkmenistan, Uzbekistan; N Africa, SW Asia, Europe]. *Specimen: Danica Anderson, Jon Salick, Bee F. Gunn, Yin Xuezhen & Senadorji 269* (MO, SABG). *Use(s):* forage and/or fodder.

Bromus L.

Bromus japonicus Thunb. ex Murray

Distribution: China. Anhui, Gansu, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan [Japan, Kazakhstan, Kyrgyzstan, Mongolia, Russia, Tajikistan, Turkmenistan, Uzbekistan; N Africa, SW Asia, Europe, introduced in North America]. *Specimen: George Yatskievych 04-203* (KUN, MO). *Use(s):* forage and/or fodder.

Bromus sinensis Keng ex Keng f.

Distribution: China. Qinghai, W Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26217* (PYU, SABG). *Use(s):* none documented.

Calamagrostis Adans.

Calamagrostis emodensis Griseb.

Distribution: China. Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, N India, Kashmir, N Pakistan]. *Specimen: Meili Team 25225* (PYU, SABG). *Use(s):* none documented.

Chloris Sw.

Chloris virgata Sw.

Distribution: China. Gansu, Hebei, Heilongjiang, Henan, Jiangsu, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, India, Myanmar (Burma), Nepal, Pakistan, Africa, Americas, SW Asia, Australia, Pacific Islands]. *Specimen: Meili Team 26886* (PYU, SABG). *Use(s):* none documented.

Cymbopogon Spreng.

Cymbopogon distans (Nees ex Steud.) Will. Watson

Distribution: China. Gansu, Guizhou, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [NW India, Nepal, Pakistan]. *Specimen: Meili Team 26464* (PYU, SABG). *Use(s):* medicinal.

Cymbopogon iwarancusa (Jones) Schult. (variant spelling *Cymbopogon jwarancusa*)

Distribution: China. SW Sichuan, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, N India, Nepal, Pakistan; Iran, Iraq]. *Specimen: George Yatskievych 04-111* (KUN, MO). *Use(s):* none documented.

Cynodon Rich.

Cynodon dactylon (L.) Pers.
Distribution: China. Widely naturalized [naturalized worldwide]. *Specimen: Danica Anderson 85* (MO, SABG). *Use(s):* none documented.

Danthonia DC.

Danthonia cumminsii Hook. f.
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, N India, Nepal, Pakistan]. *Specimen: Meili Team 26849* (PYU, SABG). *Use(s):* none documented.

Deyeuxia Clarion ex P. Beauv.

Deyeuxia pulchella Hook. f.
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, N India, Kashmir, Nepal]. *Specimen: Meilishi Team 156* (MO, SABG). *Use(s):* none documented.

Dichanthium Willemet

Dichanthium annulatum (Forssk.) Stapf
Distribution: China. Guangdong, Guangxi, Guizhou, Hainan, Hubei, Sichuan, Taiwan, Yunnan [India, Indonesia, Malaysia, Myanmar (Burma), Nepal, Pakistan, the Philippines; Africa, Pacific Islands, introduced in Americas & Australia]. *Specimen: Meili Team 27540* (PYU, SABG). *Use(s):* none documented.

Elymus L.

Elymus calcicola (Keng ex Keng & S. L. Chen) S. L. Chen
Distribution: China. Guizhou, Sichuan, Yunnan. *Specimen: Meili Team 25094* (PYU, SABG). *Use(s):* medicinal.

Elymus nutans Griseb.
Distribution: China. Gansu, Hebei, Henan, Nei Mongol, Ningxia, Qinghai, Shaanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Bhutan, India, Japan, Mongolia, Nepal; C & SW Asia]. *Specimen: Danica Anderson 92* (MO, SABG). *Use(s):* forage and/or fodder.

Elymus tangutorum (Nevski) Hand.-Mazz.
Distribution: China. Gansu, Guizhou, Hubei, Nei Mongol, Ningxia, Qinghai, Shanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan]. *Specimen: Meili Team 26645* (PYU, SABG). *Use(s):* none documented.

Eragrostis Wolf

Eragrostis ferruginea (Thunb.) P. Beauv.
Distribution: China. Anhui, Beijing, Fujian, Guizhou, Henan, Hubei, Shandong, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Japan, Korea, Laos, Nepal, Sikkim, Vietnam]. *Specimen: Meili Team 26042* (PYU, SABG). *Use(s):* none documented.

Eragrostis nigra Nees ex Steud.
Distribution: China. Gansu, Guangxi, Guizhou, Henan, Jiangxi, Qinghai, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Myanmar (Burma), Nepal, Sri Lanka; SE Asia]. *Specimen: George Yatskievych 04-149* (KUN, MO). *Use(s):* none documented.

Fargesia Franch.

Fargesia acuticontracta T. P. Yi
Distribution: China. NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* forage and/or fodder.

Fargesia declivis T. P. Yi
Distribution: China. NW Yunnan. *Specimen: Jessica Woo, Ruth Sherman & Jan Salick 607* (MO, SABG). *Use(s):* religious, handcrafts.

Fargesia melanostachys (Hand.-Mazz.) T. P. Yi
Distribution: China. W Yunnan. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn, Yin Xuezhen & Senadorji 272* (MO, SABG). *Use(s):* food, religious, handcrafts.

Festuca L.

Festuca cumminsii Stapf
Distribution: China. Gansu, Hubei, Nei Mongol, Qinghai, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Bhutan, India, Iran, Kashmir, Kazakhstan, Kyrgyzstan, Mongolia, N Pakistan, Russia, Sikkim, Tajikistan]. *Specimen: Danica Anderson, Jan Salick & Peiji 172* (MO, SABG). *Use(s):* none documented.

Festuca fascinata Keng ex S. L. Lu
Distribution: China. Gansu, Hubei, Shaanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26793* (PYU, SABG). *Use(s):* none documented.

Festuca modesta Nees ex Steud.
Distribution: China. Gansu, Qinghai, Shaanxi,

Sichuan, Yunnan [NW India, Nepal]. *Specimen: Meili Team 27334* (PYU, SABG). *Use(s):* none documented.

Festuca ovina L.

Distribution: China. Anhui, Gansu, Guizhou, Jiangsu (cultivated), Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang [Japan, Korea, Mongolia, Russia; SW Asia (Caucasus), Europe, North America]. *Specimen: Meili Team 25369* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Festuca vierhapperi Hand.-Mazz.

Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26905* (PYU, SABG). *Use(s):* none documented.

Helictotrichon Besser

Helictotrichon junghuhnii (Büse) Henrard

Distribution: China. Guizhou, Henan, Qinghai, Shaanxi, Sichuan, E Xizang (Tibet), Yunnan [Bhutan, India, Indonesia, Myanmar (Burma), Nepal, Pakistan]. *Specimen: Meili Team 26644* (PYU, SABG). *Use(s):* none documented.

Heteropogon Pers.

Heteropogon contortus (L.) P. Beauv. ex Roem. & Schult.

Distribution: China. Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Henan, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [naturalized worldwide]. *Specimen: George Yatskievych 04-173* (KUN, MO). *Use(s):* forage and/or fodder.

Hordeum L.

Hordeum vulgare L.

Distribution: China. Widely cultivated [cultivated worldwide]. *Specimen: Anthony Amend 78* (SABG). *Use(s):* food, alcoholic beverage.

Lolium L.

Lolium multiflorum Lam.

Distribution: China. Anhui, Fujian, Guizhou, Hebei, Henan, Hunan, Jiangxi, Nei Mongol, Shaanxi, Sichuan, Taiwan, Xinjiang, Yunnan [naturalized worldwide]. *Specimen: George Yatskievych 04-201* (KUN, MO). *Use(s):* none documented.

Pennisetum Rich.

Pennisetum flaccidum Griseb.

Distribution: China. Gansu, Hebei, Heilongjiang, Henan, Hubei, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, NW India, Iran, Kashmir, Nepal, Pakistan, Tajikistan]. *Specimen: Meili Team 25210* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Phleum L.

Phleum alpinum L.

Distribution: China. Gansu, Heilongjiang, Henan, Hubei, Shaanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, India, Japan, Kashmir, Kazakhstan, Kyrgyzstan, Mongolia, Pakistan, Russia, Tajikistan, Europe, North America, South America]. *Specimen: Meili Team 26221* (PYU, SABG). *Use(s):* none documented.

Piptatherum P. Beauv.

Piptatherum munroi (Stapf) Mez

Distribution: China. Gansu, Guizhou, Qinghai, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [E Afghanistan, Bhutan, N India, Kashmir, Nepal, N Pakistan]. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn, Yin Xuezhen & Senadorji 318B* (MO, SABG). *Use(s):* forage and/or fodder.

Poa L.

Poa annua L.

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang [Afghanistan, Bhutan, India, Indonesia, Japan, Kazakhstan, Korea, Kyrgyzstan, Malaysia, Mongolia, Myanmar (Burma), Nepal, Papua New Guinea, Pakistan, Russia, Sri Lanka, Tajikistan, Turkmenistan, Uzbekistan, Vietnam; Africa, SW Asia, Australia, Europe, North America, South America, Pacific Islands]. *Specimen: Meili Team 24977* (PYU, SABG). *Use(s):* forage and/or fodder.

Poa attenuata Trin.

Distribution: China. Gansu, Hebei, Nei Mongol, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Bhutan, India, Kazakhstan, Kyrgyzstan, Mongolia, Myanmar (Burma), Nepal, Pakistan, Russia, Tajikistan, Uzbekistan]. *Specimen: Meilishi Team 57* (PYU, SABG). *Use(s):* forage and/or fodder.

Poa grandis Hand.-Mazz.

Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan [Myanmar (Burma)]. *Specimen: Meili Team 27936B* (PYU, SABG). *Use(s):* none documented.

Poa khasiana Stapf

Distribution: China. W Sichuan, Taiwan, SE Xizang (Tibet), NW Yunnan [India (Khasi Hills), Myanmar (Burma)]. *Specimen: Meili Team 24809* (PYU, SABG). *Use(s):* none documented.

Poa lipskyi Roshev.

Distribution: China. Qinghai, Xinjiang, Xizang (Tibet), Yunnan [Kazakhstan, Kyrgyzstan, NW Mongolia, Tajikistan, Uzbekistan]. *Specimen: Meili Team 25364* (PYU, SABG). *Use(s):* none documented.

Poa mairei Hack.

Distribution: China. SW Sichuan, SE Xizang (Tibet), N Yunnan [Bhutan, India, Nepal, Sikkim]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Poa nemoralis L.

Distribution: China. Gansu, Guizhou, Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Bhutan, India, Japan, Kazakhstan, Korea, Kyrgyzstan, Mongolia, Nepal, Pakistan, Russia, Tajikistan, Uzbekistan; SW Asia, Europe, naturalized in North America]. *Specimen: Meili Team 26013* (PYU, SABG). *Use(s):* none documented.

Poa polycolea Stapf

Distribution: China. Qinghai, W Sichuan, SW Xinjiang, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, India, Nepal, Pakistan]. *Specimen: Meili Team 25799* (PYU, SABG). *Use(s):* forage and/or fodder.

Poa pratensis L.

Distribution: China. Anhui, Gansu, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, India, Indonesia, Japan, Kazakhstan, Korea, Kyrgyzstan, Mongolia, Myanmar (Burma), Nepal, Papua New Guinea, Pakistan, Russia, Sri Lanka, Tajikistan, Turkmenistan, Uzbekistan; Africa, SW Asia, Australia, Europe, North America, Pacific Islands, South America]. *Specimen: Meili Team 27283* (PYU, SABG). *Use(s):* fodder.

Poa szechuensis Rendle

Distribution: China. Gansu, Hebei, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan [India, Sikkim, Nepal]. *Specimen: Meili Team 26180* (PYU, SABG). *Use(s):* none documented.

Polypogon Desf.

Polypogon fugax Nees ex Steud.

Distribution: China. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Jiangsu, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, N India, Japan, Kazakhstan, Korea, Kyrgyzstan, Myanmar (Burma), Nepal, Pakistan, Russia, Tajikistan, Turkmenistan, Uzbekistan; SW Asia, introduced elsewhere]. *Specimen: George Yatskievych 04-182* (KUN, MO). *Use(s):* none documented.

Schizachyrium Nees

Schizachyrium delavayi (Hack.) Bor

Distribution: China. Guangxi, Guizhou, Hunan, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India (Naga Hills), N Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 26040* (PYU, SABG). *Use(s):* none documented.

Secale L.

Secale cereale L.

Distribution: China. Anhui, Fujian, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Nei Mongol, Ningxia, Shaanxi, Taiwan, Xinjiang, Yunnan [widely cultivated]. *Specimen: Jan Salick 9737* (MO, SABG). *Use(s):* food.

Setaria P. Beauv.

Setaria viridis (L.) P. Beauv.

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang [temperate & subtropical regions of the Old World; introduced elsewhere]. *Specimen: Meili Team 26633* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Tripogon Roem. & Schult.

Tripogon yunnanensis J. L. Yang ex S. M. Phillips & S. L. Chen

Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Danica Anderson 18* (MO, SABG). *Use(s):* forage and/or fodder.

Trisetum Pers.

Trisetum spicatum (L.) K. Richt.

Distribution: China. Gansu, Hebei, Heilongjiang, Hubei, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, N India, Japan, Kazakhstan, Kyrgyzstan, Korea, Mongolia, Nepal, Pakistan, Russia, Tajikistan, Uzbekistan; SW Asia (Caucasus), Australia, Europe, North America, South America]. *Specimen: Meili Team 25366* (PYU, SABG). *Use(s):* none documented.

Triticum L.

Triticum aestivum L.

Distribution: China. Widely cultivated [cultivated worldwide]. *Specimen: George Yatskievych 04-208* (KUN, MO). *Use(s):* food, forage and/or fodder.

Yushania Keng f.

Yushania niitakayamensis (Hayata) Keng f.

Distribution: China. Taiwan, cultivated in Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* forage and/or fodder.

Zea L.

Zea mays L.

Distribution: China. Widely cultivated [cultivated worldwide]. *Specimen: Jan Salick 9708* (MO, SABG). *Use(s):* food, forage and/or fodder.

Polygalaceae

Polygala L.

Polygala sibirica L.

Distribution: China. Gansu, Guizhou, Hebei, Heilongjiang, Henan, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Japan, Kashmir, Korea, Mongolia, Myanmar (Burma), Nepal, Russia; SW Asia, Australia, Europe]. *Specimen: Meili Team 25191* (PYU, SABG). *Use(s):* medicinal.

Polygonaceae

Antenoron Raf.

Antenoron filiforme (Thunb.) Roberty & Vautier

Distribution: China. Anhui, Fujian, S Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, S Shaanxi, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang [Japan, Korea, Myanmar (Burma), Russia]. *Specimen: Kurt Hoffmeister, Deng Zhiwei & Anthony Amend 18* (MO, SABG). *Use(s):* forage and/or fodder.

Fagopyrum Mill.

Fagopyrum esculentum Moench

Distribution: China. Widely cultivated and naturalized [cultivated and naturalized worldwide]. *Specimen: Meili Team 26482* (PYU, SABG). *Use(s):* food, medicinal.

Fagopyrum gilesii (Hemsl.) Hedberg

Distribution: China. Sichuan, Yunnan [Pakistan]. *Specimen: Danica Anderson 25* (MO, SABG). *Use(s):* forage and/or fodder.

Fagopyrum gracilipes (Hemsl.) Dammer ex Diels

Distribution: China. S Gansu, Guizhou, Henan, Hubei, Shaanxi, Sichuan, Yunnan. *Specimen: Meili Team 24805* (PYU, SABG). *Use(s):* none documented.

Fagopyrum leptopodum (Diels) Hedberg

Distribution: Sichuan, Yunnan. *Specimen: Meili Team 26477* (PYU, SABG). *Use(s):* medicinal.

Fagopyrum tataricum (L.) Gaertn.

Distribution: China. Gansu, Guizhou, Hebei, Heilongjiang, Hubei, Hunan, Jilin, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Afghanistan, India, Mongolia, Nepal, intro-

duced in Kazakhstan, Kyrgyzstan, Russia (Far East), Tajikistan, cultivated in Bhutan, Myanmar, Sikkim; cultivated in Europe, North America]. *Specimen: Jessica Woo & Ruth Sherman 494* (MO, SABG). *Use(s):* forage and/or fodder.

Fallopia Adans.

Fallopia aubertii (L. Henry) Holub

Distribution: China. Gansu, Guizhou, Henan, Hubei, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25166* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Koenigia L.

Koenigia islandica L.

Distribution: China. Gansu, Qinghai, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Bhutan, NW India, Kashmir, Kazakhstan, Kyrgyzstan, Mongolia, Nepal, Pakistan, Russia, Sikkim; Arctic regions, N Europe, North America]. *Specimen: Meili Team 26434* (PYU, SABG). *Use(s):* none documented.

Oxyria Hill

Oxyria digyna (L.) Hill

Distribution: China. Jilin, Liaoning, Shaanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, India, Japan, Kashmir, Kazakhstan, Korea, Kyrgyzstan, Mongolia, Nepal, Pakistan, Russia, Sikkim, Tajikistan; SW Asia, Europe, North America]. *Specimen: Meili Team 25607* (PYU, SABG). *Use(s):* medicinal.

Oxyria sinensis Hemsl.

Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25967* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder, soap.

Polygonum L.

Polygonum affine D. Don

Distribution: China. Xizang (Tibet), Yunnan [NW India, Kashmir, Nepal, Pakistan, Sikkim]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Polygonum aviculare L.

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang [widely distributed in N temperate zone; widely naturalized in S temperate zone]. *Specimen: Meili Team 25301* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Polygonum campanulatum Hook. f.

Distribution: China. Guizhou, W Hubei, Sichuan, Xizang (Tibet), Yunnan [Bhutan, N Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 27912* (PYU, SABG). *Use(s):* medicinal.

Polygonum capitatum Buch.-Ham. ex D. Don

Distribution: China. Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, N India, Malaysia, Myanmar (Burma), Nepal, Sikkim, Sri Lanka, Thailand, Vietnam]. Report based on Fang Zhendong, pers. obs. *Use(s):* forage and/or fodder.

Polygonum delicatulum Meisn.

Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, N India, Nepal, Pakistan, Sikkim]. *Specimen: Meili Team 26147* (PYU, SABG). *Use(s):* none documented.

Polygonum emodi Meisn.

Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, NW India, Kashmir, Nepal, Sikkim]. *Specimen: Meili Team 25543* (PYU, SABG). *Use(s):* none documented.

Polygonum filicaule Wall. ex Meisn.

Distribution: China. Sichuan, Taiwan, Xizang (Tibet), Yunnan [Bhutan, NW India, Myanmar (Burma), Nepal, Pakistan, Sikkim]. *Specimen: Meili Team 26925* (PYU, SABG). *Use(s):* none documented.

Polygonum forrestii Diels

Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan [Bhutan, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Fang Zhendong 252* (SABG). *Use(s):* medicinal.

Polygonum glaciale (Meisn.) Hook. f.

Distribution: China. Gansu, Hebei, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan [Afghanistan, India, Nepal, Sikkim]. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn*

& Yin Xuezhen 359 (MO, SABG). *Use(s):* none documented.

Polygonum griffithii Hook. f.
Distribution: China. Xizang (Tibet), Yunnan [Bhutan, N Myanmar (Burma)]. *Specimen: Meili Team 28094* (PYU, SABG). *Use(s):* none documented.

Polygonum hookeri Meisn.
Distribution: China. Gansu, Qinghai, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meilishi Team 85* (PYU, SABG). *Use(s):* none documented.

Polygonum lichiangense W. W. Sm.
Distribution: China. Yunnan. *Specimen: Meili Team 25966* (PYU, SABG). *Use(s):* medicinal.

Polygonum macrophyllum D. Don
Distribution: China. Gansu, Guizhou, Hubei, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, N India, Nepal, Sikkim]. *Specimen: Meili Team 26379* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Polygonum microcephalum D. Don
Distribution: China. S Gansu, Guizhou, Hubei, Hunan, S Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Meili Team 27205* (PYU, SABG). *Use(s):* none documented.

Polygonum nepalense Meisn.
Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Afghanistan, Bhutan, India, Indonesia, Japan, Korea, Malaysia, Nepal, New Guinea, Pakistan, the Philippines, Russia (Far East), Sikkim, Thailand; tropical Africa, Americas]. *Specimen: George Yatskievych 04-202* (KUN, MO). *Use(s):* forage and/or fodder.

Polygonum paleaceum Wall.
Distribution: China. Guizhou, Sichuan, Yunnan [NE India, N Thailand]. *Specimen: Meili Team 26900* (PYU, SABG). *Use(s):* medicinal.

Polygonum runcinatum Buch.-Ham. ex D. Don
Distribution: China. Anhui, Gansu, Guangxi, Guizhou, Henan, Hubei, Hunan, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, N India, Indonesia (Sumatra), Malaysia, Myanmar (Burma), Nepal, the Philippines, Sikkim, Thailand]. *Specimen: Meili Team 27271* (PYU, SABG). *Use(s):* medicinal.

Polygonum sinomontanum Sam.
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26728* (PYU, SABG). *Use(s):* medicinal.

Polygonum suffultum Maxim.
Distribution: China. Anhui, Gansu, Guizhou, Hebei, Hubei, Hunan, Jiangxi, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan, Zhejiang [Japan, Korea]. *Specimen: Meili Team 24948* (PYU, SABG). *Use(s):* none documented.

Polygonum viviparum L.
Distribution: China. Gansu, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Bhutan, India, Japan, Kazakhstan, Korea, Kyrgyzstan, Mongolia, Myanmar (Burma), Nepal, Russia, Sikkim, Tajikistan, Thailand; SW Asia, Europe, North America]. *Specimen: Meili Team 27957* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder

Polygonum wallichii Meisn.
Distribution: China. Xizang (Tibet), Yunnan [NE India, Nepal, Sikkim]. *Specimen: George Yatskievych 04-063* (KUN, MO). *Use(s):* medicinal.

Rheum L.

Rheum acuminatum Hook. f. & Thomson
Distribution: China. Gansu, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Kashmir, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 25787* (PYU, SABG). *Use(s):* medicinal.

Rheum delavayi Franch.
Distribution: China. W Sichuan, N Yunnan [Bhutan, Nepal]. *Specimen: Meili Team 26583* (PYU, SABG). *Use(s):* medicinal.

Rumex L.

Rumex nepalensis Spreng.
Distribution: China. S Gansu, Guangxi, Guizhou, Henan, Hubei, Hunan, SW Qinghai, S Shaanxi, Sichuan, Xizang (Tibet), Yunnan

[Afghanistan, Bhutan, India, Indonesia, Japan (introduced), Myanmar (Burma), Nepal, Pakistan, Sikkim, Tajikistan, Vietnam; SW Asia]. *Specimen: Meili Team 28153* (PYU, SABG). *Use(s):* medicinal.

Primulaceae

Androsace L.

Androsace bulleyana Forrest

Distribution: China. NW Yunnan. *Specimen: Meili Team 27456* (PYU, SABG). *Use(s):* medicinal.

Androsace delavayi Franch.

Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan [Bhutan, NE India, N Myanmar (Burma), Nepal, Sikkim]. *Specimen: George Yatskievych 04-106* (KUN, MO). *Use(s):* medicinal.

Androsace erecta Maxim.

Distribution: China. Gansu, Qinghai, Sichuan, Xizang (Tibet), Yunnan [Nepal]. *Specimen: Danica Anderson 39* (MO, SABG). *Use(s):* none documented.

Androsace sublanata Hand.-Mazz.

Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Meili Team 25505* (PYU, SABG). *Use(s):* none documented.

Androsace wardii W. W. Sm.

Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25842* (PYU, SABG). *Use(s):* none documented.

Androsace zambalensis (Petitm.) Hand.-Mazz.

Distribution: China. W Sichuan, SE Xizang (Tibet), NW Yunnan [India, Nepal, Sikkim]. *Specimen: Meili Team 25919* (PYU, SABG). *Use(s):* none documented.

Lysimachia L.

Lysimachia sp.

Specimen: Kurt Hoffmeister, Deng Zhiwei & Anthony Amend 47 (MO, SABG). *Use(s):* none documented.

Maesa Forssk.

Maesa montana A. DC.

Distribution: China. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Sichuan, Taiwan, SE Xizang (Tibet), Yunnan [India, Myanmar (Burma), Thailand]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal, dye.

Myrsine L.

Myrsine africana L.

Distribution: China. Gansu, Guangxi, Guizhou, Hubei, Hunan, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan [India; SW Asia, Azores, Africa]. *Specimen: George Yatskievych 04-129* (KUN, MO). *Use(s):* medicinal, forage and/or fodder, handcrafts.

Primula L.

Primula amethystina Franch.

Distribution: China. W Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25025* (PYU, SABG). *Use(s):* none documented.

Primula bella Franch.

Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Fang Zhendong 250* (SABG). *Use(s):* none documented.

Primula boreiocalliantha Balf. f. & Forrest

Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Meili Team 25540* (PYU, SABG). *Use(s):* medicinal.

Primula bella. Photograph by Robert Moseley.

Primula bracteata Franch.
Distribution: China. SW Sichuan, E Xizang (Tibet), N & W Yunnan. *Specimen: Meili Team 25417* (PYU, SABG). *Use(s):* medicinal.

Primula calderiana Balf. f. & R. E. Cooper
Distribution: China. S Xizang (Tibet), Yunnan [Bhutan, NE India, Nepal, Sikkim]. *Specimen: Wayne Law, Yang Yongping, Anthony Amend, Peng Shengjing & Sun Hongyan 129* (MO, SABG). *Use(s):* medicinal.

Primula calliantha Franch.
Distribution: China. Xizang (Tibet), Yunnan [India, Myanmar (Burma)]. *Specimen: Meilishi Team 261* (PYU, SABG). *Use(s):* none documented.

Primula capitata Hook.
Distribution: China. S Xizang (Tibet), NW Yunnan [Bhutan, NE India, Sikkim]. *Specimen: Fang Zhendong 1734* (SABG). *Use(s):* none documented.

Primula chionantha Balf. f. & Forrest
Distribution: China. SW Sichuan, E Xizang (Tibet), N & NW Yunnan. *Specimen: Fang Zhendong 639* (SABG). *Use(s):* medicinal.

Primula deflexa Duthie
Distribution: China. W Sichuan, SE Xizang (Tibet), NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Primula diantha Bureau & Franch.
Distribution: China. W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25852* (PYU, SABG). *Use(s):* none documented.

Primula dryadifolia Franch.
Distribution: China. W Sichuan, Xizang (Tibet), NW Yunnan [Bhutan, Myanmar (Burma)]. *Specimen: Meili Team 27960* (PYU, SABG). *Use(s):* none documented.

Primula gemmifera Batalin
Distribution: China. S Gansu, W Sichuan, NE Xizang (Tibet), NW Yunnan. *Specimen: Fang Zhendong 185* (SABG). *Use(s):* medicinal.

Primula geraniifolia Hook. f.
Distribution: China. SE Xizang (Tibet), NW Yunnan [Bhutan, NE India, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 25575* (PYU, SABG). *Use(s):* none documented.

Primula heucherifolia Franch.
Distribution: China. W Sichuan, Yunnan. *Specimen: George Yatskievych 04-075* (KUN, MO). *Use(s):* food, medicinal.

Primula hookeri Watt
Distribution: China. SE Xizang (Tibet), NW Yunnan [Bhutan, NE India, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 24970* (PYU, SABG). *Use(s):* none documented.

Primula limbata Balf. f. & Forrest
Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25016* (PYU, SABG). *Use(s):* none documented.

Primula minor Balf. f. & Kingdon-Ward
Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 27517* (PYU, SABG). *Use(s):* none documented.

Primula muscarioides Hemsl.
Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: G. Forrest 306* (E, type not seen). *Use(s):* none documented.

Primula pinnatifida Franch.
Distribution: China. SW Sichuan, N Yunnan. *Specimen: Meili Team 25551* (PYU, SABG). *Use(s):* none documented.

Primula polyneura Franch.
Distribution: China. SE Gansu, W Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25783* (PYU, SABG). *Use(s):* none documented.

Primula pulchella Franch.
Distribution: China. SW Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Jessica Woo & Ruth Sherman 492* (MO, SABG). *Use(s):* medicinal.

Primula russeola Balf. f. & Forrest
Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25851* (PYU, SABG). *Use(s):* none documented.

Primula secundiflora Franch.
Distribution: China. E Qinghai, W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25853* (PYU, SABG). *Use(s):* medicinal.

Primula serratifolia Franch.
Distribution: China. SE Xizang (Tibet), NW Yunnan [N Myanmar (Burma)]. *Specimen: Meili Team 28038* (PYU, SABG). *Use(s):* medicinal.

Primula sikkimensis Hook.

Distribution: China. W Sichuan, Xizang (Tibet), NW Yunnan [Bhutan, NE. India, Myanmar (Burma), Nepal, Sikkim. *Specimen: Fang Zhendong 256* (SABG). *Use(s):* medicinal.

Primula silaensis Petitm.

Distribution: China. NW Yunnan [NE India, Myanmar (Burma)]. *Specimen: Heidi Schmidt et al. 4093* (MO, SABG). *Use(s):* none documented.

Primula sinoplantaginea Balf. f.

Distribution: China. W Sichuan, NW Yunnan. *Specimen: Zhang Canming 89-38* (SABG). *Use(s):* none documented.

Primula sonchifolia Franch.

Distribution: China. Sichuan, NW Yunnan [N Myanmar (Burma)]. *Specimen: Meili Team 25855* (PYU, SABG). *Use(s):* food, medicinal.

Primula tenella King ex Hook. f.

Distribution: China. S Xizang (Tibet), Yunnan [Bhutan]. *Specimen: Meili Team 27435* (PYU, SABG). *Use(s):* none documented.

Primula watsonii Dunn

Distribution: China. W Sichuan, NW Yunnan. *Specimen: Meili Team 25916* (PYU, SABG). *Use(s):* none documented.

Primula wilsonii Dunn

Distribution: China. W Sichuan, Yunnan. *Specimen: Fang Zhendong & Zhang Canming 2179* (SABG). *Use(s):* medicinal.

Ranunculaceae

Aconitum L.

Aconitum ouvrardianum Hand.-Mazz.

Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Fang Zhendong 1738* (SABG). *Use(s):* medicinal, poisonous.

Aconitum pendulicarpum M. C. Chang ex W. T. Wang & P. K. Hsiao

Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25638* (PYU, SABG). *Use(s):* none documented.

Aconitum pulchellum Hand.-Mazz.

Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan [Bhutan, Myanmar (Burma), Sikkim]. *Specimen: Meili Team 27937* (PYU, SABG). *Use(s):* medicinal.

Aconitum soulliei Finet & Gagnep.

Distribution: China. NW Yunnan. *Specimen: Meili Team 27938* (PYU, SABG). *Use(s):* medicinal.

Aconitum stramineiflorum M. C. Chang ex W. T. Wang & P. K. Hsiao

Distribution: China. NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Aconitum stylosoides W. T. Wang

Distribution: China. W Sichuan, Yunnan. *Specimen: Meili Team 28095* (PYU, SABG). *Use(s):* none documented.

Aconitum stylosum Stapf

Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 28156* (PYU, SABG). *Use(s):* medicinal.

Aconitum tanguticum (Maxim.) Stapf

Distribution: China. S Gansu, E Qinghai, Shaanxi, W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Jan Salick & Sonam Dorje 9629* (MO, SABG). *Use(s):* medicinal.

Aconitum tongolense Ulbr.

Distribution: China. SW & W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 26423* (PYU, SABG). *Use(s):* medicinal.

Aconitum wardii H. R. Fletcher & Lauener

Distribution: China. W Sichuan, NW Yunnan. *Specimen: Meili Team 25768* (PYU, SABG). *Use(s):* medicinal.

Actaea L.

Actaea asiatica H. Hara

Distribution: China. Gansu, Hebei, Heilongjiang, Hubei, Jilin, Liaoning, S Nei Mongol, Qinghai, Shaanxi, Shanxi, Sichuan, E Xizang (Tibet), Yunnan [Japan, Korea, Russia (Far East)]. *Specimen: Danica Anderson 382* (MO, SABG). *Use(s):* medicinal.

Anemone L.

Anemone coelestina Franch.

Distribution: China. SW Gansu, S Qinghai, Sichuan, E & S Xizang (Tibet), Yunnan [Bhutan, Nepal, Sikkim]. *Specimen: Meili Team 25946* (PYU, SABG). *Use(s):* none documented.

Anemone delavayi Franch.

Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Jessica Woo & Ruth Sherman 418* (MO, SABG). *Use(s):* none documented.

Anemone demissa Hook. f. & Thomson
Distribution: China. S Gansu, S Qinghai, W Sichuan, E & S Xizang (Tibet), NW Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Ruizi La Team 93* (MO, SABG). *Use(s):* oil.

Anemone geum H. Lév.
Distribution: China. Gansu, W Hebei, N Ningxia, Qinghai, Shaanxi, SW Shanxi, Sichuan, S Xinjiang, Xizang (Tibet), Yunnan [N India, Nepal, Sikkim]. *Specimen: Jessica Woo & Ruth Sherman 424* (MO, SABG). *Use(s):* none documented.

Anemone hupehensis (Lemoine) Lemoine
Distribution: China. Native in N Guangdong, N Guangxi, Guizhou, W Hubei, Jiangxi, S Shaanxi, Sichuan, Taiwan, Yunnan, E Zhejiang, cultivated and naturalized in Anhui, Fujian, Guangdong, Jiangsu, Jiangxi, Yunnan, Zhejiang [cultivated worldwide]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Anemone imbricata Maxim.
Distribution: China. SW Gansu, Qinghai, W Sichuan, E Xizang (Tibet), Yunnan. *Specimen: Meili Team 25871* (PYU, SABG). *Use(s):* none documented.

Anemone obtusiloba D. Don
Distribution: China. SW Sichuan, E & S Xizang (Tibet), W Yunnan [Afghanistan, Bhutan, N India, Kashmir, Mongolia, Myanmar (Burma), Nepal, Pakistan, Sikkim]. *Specimen: Meili Team 25024* (PYU, SABG). *Use(s):* medicinal.

Anemone rivularis Buch.-Ham. ex DC.
Distribution: China. C & S Gansu, W Guangxi, Guizhou, N & W Hebei, NW Henan, SW Hubei, S Nei Mongol, Ningxia, E Qinghai, Shaanxi, Sichuan, W Xinjiang, E & S Xizang (Tibet), Yunnan [Bhutan, India, Indonesia, Nepal, Sikkim, Sri Lanka]. *Specimen: Meili Team 27248* (PYU, SABG). *Use(s):* medicinal.

Anemone rockii Ulbr.
Distribution: China. Gansu, Sichuan, Xizang (Tibet), Yunnan [Bhutan, Nepal, Sikkim]. *Specimen: Meili Team 25535* (PYU, SABG). *Use(s):* none documented.

Anemone rupestris Wall. ex Hook. f. & Thomson
Distribution: China. NW Sichuan, S Xizang (Tibet), NW Yunnan [Bhutan, Nepal, Sikkim]. *Specimen: Meili Team 25582* (PYU, SABG). *Use(s):* medicinal.

Anemone rupicola Cambess.
Distribution: China. W Sichuan, S Xizang (Tibet), NW Yunnan [Bhutan, N India, Kashmir, Nepal, Pakistan, Sikkim]. *Specimen: Fang Zhendong 205* (SABG). *Use(s):* none documented.

Anemone tibetica W. T. Wang
Distribution: China. S Xizang (Tibet), Yunnan. *Specimen: Bee Gunn 220* (MO, SABG). *Use(s):* none documented.

Anemone vitifolia Buch.-Ham. ex DC.
Distribution: China. SW Sichuan, S Xizang (Tibet), Yunnan [Bhutan, N India, Kashmir, N Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 25710* (PYU, SABG). *Use(s):* medicinal.

Aquilegia L.

Aquilegia parviflora Ledeb.
Distribution: China. N Heilongjiang, Yunnan. [Japan, Mongolia, Russia (E Siberia)]. *Specimen: Wu Sugong et al. WB-219* (KUN). *Use(s):* none documented.

Aquilegia rockii Munz
Distribution: China. SW Sichuan, SE Xizang (Tibet), NE Yunnan. *Specimen: Liu Lin 21* (SABG). *Use(s):* none documented.

Asteropyrum J. R. Drumm. & Hutch.

Asteropyrum peltatum (Franch.) J. R. Drumm. & Hutch.
Distribution: China. W Hubei, Sichuan, NW Yunnan [Bhutan, Myanmar (Burma)]. *Specimen: Fang Zhendong & He Guang 532* (SABG). *Use(s):* none documented.

Callianthemum C. A. Mey.

Callianthemum pimpinelloides (D. Don) Hook. f. & Thomson
Distribution: China. Qinghai, Sichuan, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, India, Kashmir, Nepal, Pakistan, Sikkim]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Caltha L.

Caltha palustris L.

Distribution: China. S & SW Gansu, Guizhou, Hebei, Heilongjiang, W Henan, Jilin, Liaoning, Nei Mongol, Shanxi, Sichuan, Xinjiang, E & SE Xizang (Tibet), C & NW Yunnan, Zhejiang [widespread in Europe, Asia, North America]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Caltha scaposa Hook. f. & Thomson
Distribution: China. S Gansu, S Qinghai, W Sichuan, SE Xizang (Tibet), NW Yunnan [Bhutan, N India, Nepal, Sikkim]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Caltha sinogracilis W. T. Wang
Distribution: China. SE Xizang (Tibet), NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Cimicifuga L.

Cimicifuga foetida L.
Distribution: China. Gansu, W Henan, Hubei, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Kazakhstan, Mongolia, Myanmar (Burma), Russia, Sikkim]. *Specimen: Meili Team 28022* (PYU, SABG). *Use(s):* medicinal.

Cimicifuga yunnanensis P. K. Hsiao
Distribution: China. NW Yunnan. *Specimen: Meili Team 26130* (PYU, SABG). *Use(s):* medicinal.

Clematis L.

Clematis chrysocoma Franch.
Distribution: China. W Guizhou, W Sichuan, Yunnan. *Specimen: Meili Team 25641* (PYU, SABG). *Use(s):* medicinal, ornamental.

Clematis connata DC.
Distribution: China. W Guizhou, SW to W Sichuan, S Xizang (Tibet), N to NW Yunnan [Bhutan, N India, Kashmir, Nepal, N Pakistan, Sikkim]. *Specimen: Fang Zhendong 1782* (SABG). *Use(s):* medicinal, poisonous.

Clematis delavayi Franch.
Distribution: China. SW to W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 26025* (PYU, SABG). *Use(s):* medicinal.

Clematis gracilifolia Rehder & E. H. Wilson
Distribution: China. S Gansu, W Sichuan, E to SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25438* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Clematis lasiandra Maxim.
Distribution: China. S Anhui, S Gansu, N Guangdong, N Guangxi, Guizhou, SW Henan, Hubei, Hunan, W Jiangxi, S Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang [Japan]. *Specimen: Meili Team 25790* (PYU, SABG). *Use(s):* medicinal.

Clematis montana Buch.-Ham. ex DC.
Distribution: China. S Anhui, NW Fujian, S Gansu, N Guangxi, Guizhou, SW Henan, Hubei, Hunan, Jiangxi, S Ningxia, E Qinghai, S Shaanxi, Sichuan, Taiwan, E & S Xizang (Tibet), Yunnan, Zhejiang [Afghanistan, Bhutan, N India, Kashmir, N Myanmar (Burma), Nepal, N Pakistan, Sikkim]. *Specimen: Fang Zhendong 1785* (SABG). *Use(s):* food, medicinal, forage and/or fodder.

Clematis pseudopogonandra Finet & Gagnep.
Distribution: China. W Sichuan, E & SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25520* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Clematis puberula Hook. f. & Thomson
Distribution: China. S Anhui, N Fujian, S Gansu, W Guangdong, N Guangxi, Guizhou, S & W Henan, Hubei, Hunan, NE Jiangsu, Jiangxi, S Shaanxi, Shandong, S Shanxi, Sichuan, E to SE Xizang (Tibet), Yunnan, N Zhejiang [Bhutan, N India, N Myanmar (Burma), Nepal]. *Specimen: Meili Team 26037* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Clematis ranunculoides Franch.
Distribution: China. NW Guangxi, W Guizhou, SW Sichuan, C to NW Yunnan. *Specimen: Kurt Hoffmeister, Deng Zhiwei & Anthony Amend 102* (MO, SABG). *Use(s):* medicinal.

Clematis rehderiana W. G. Craib
Distribution: China. E Qinghai, W Sichuan, Xizang (Tibet), NW Yunnan [Nepal]. *Specimen: Meili Team 26694* (PYU, SABG). *Use(s):* none documented.

Delphinium L.

Delphinium beesianum W. W. Sm.
Distribution: China. W Sichuan, E Xizang

(Tibet), NW Yunnan. *Specimen: Meili Team 26540* (PYU, SABG). *Use(s):* medicinal.

Delphinium bulleyanum Forrest ex Diels
Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Meili Team 26368* (PYU, SABG). *Use(s):* medicinal.

Delphinium ceratophorum Franch.
Distribution: China. NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Delphinium chrysotrichum Finet & Gagnep.
Distribution: China. W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Fang Zhendong 1391* (SABG). *Use(s):* none documented.

Delphinium delavayi Franch.
Distribution: China. W Guizhou, SW Sichuan, Yunnan. *Specimen: Yang Jinsheng 8871* (YIM). *Use(s):* medicinal.

Delphinium forrestii Diels
Distribution: China. SW Sichuan, SE Xizang (Tibet), N Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Delphinium likiangense Franch.
Distribution: China. NW Yunnan. *Specimen: Meili Team 26167* (PYU, SABG). *Use(s):* pesticide.

Delphinium majus (W. T. Wang) W. T. Wang
Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Meili Team 25164* (PYU, SABG). *Use(s):* none documented.

Delphinium tatsienense Franch.
Distribution: China. SE Qinghai, W Sichuan, N Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Delphinium tenii H. Lév.
Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Fang Zhendong 1767* (SABG). *Use(s):* medicinal.

Delphinium thibeticum Finet & Gagnep.
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Bee Gunn 176A* (MO, SABG). *Use(s):* none documented.

Delphinium yuanum F. H. Chen
Distribution: China. NW Yunnan. *Specimen: Meili Team 26036* (PYU, SABG). *Use(s):* none documented.

Delphinium chrysotrichum. Photograph by Fang Zhendong.

Kingdonia Balf. f. & W. W. Sm.

Kingdonia uniflora Balf. f. & W. W. Sm.
Distribution: China. Gansu, S Shaanxi, W Sichuan, NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Oxygraphis Bunge

Oxygraphis delavayi Franch.
Distribution: China. NW Sichuan, SE Xizang (Tibet), NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Oxygraphis glacialis (Fisch. ex DC.) Bunge
Distribution: China. S Gansu, Qinghai, S Shaanxi, W Sichuan, Xinjiang, Xizang (Tibet), NW Yunnan [Bhutan, N India, Kazakhstan, Mongolia, Nepal, Russia]. *Specimen: Jessica Woo & Ruth Sherman 439* (MO, SABG). *Use(s):* medicinal.

Paraquilegia J. R. Drumm. & Hutch.

Paraquilegia microphylla (Royle) J. R. Drumm. & Hutch.
Distribution: China. SW Gansu, Qinghai, W Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Kazakhstan, Nepal, N Pakistan, Russia, Sikkim, Tajikistan]. *Specimen: Jan Salick, Robert Moseley & Heidi H. Schmidt 9662* (MO, SABG). *Use(s):* medicinal.

Ranunculus L.

Ranunculus hirtellus Royle
Distribution: China. E & S Qinghai, W Sichuan, Xizang (Tibet), NW Yunnan [Afghanistan, N

India, Kashmir, Nepal, N Pakistan]. *Specimen: Meili Team 24986* (PYU, SABG). *Use(s):* none documented.

Ranunculus pegaeus Hand.-Mazz.
Distribution: China. S Xizang (Tibet), NW Yunnan [Nepal, Sikkim]. *Specimen: Meili Team 25846* (PYU, SABG). *Use(s):* none documented.

Ranunculus tanguticus (Maxim.) Ovcz.
Distribution: China. Gansu, SW Nei Mongol, Ningxia, E Qinghai, S Shaanxi, C & NW Shanxi, W Sichuan, S & E Xizang (Tibet), NW Yunnan [Nepal]. *Specimen: Meili Team 25303* (PYU, SABG). *Use(s):* medicinal.

Souliea Franch.

Souliea vaginata (Maxim.) Franch.
Distribution: China. S Gansu, E Qinghai, S Shaanxi, W Sichuan, SE Xizang (Tibet), NW Yunnan [Bhutan, India, N Myanmar (Burma), Sikkim]. Specimen: *Meilishi Team 267* (PYU, SABG). *Use(s):* medicinal.

Thalictrum L.

Thalictrum alpinum L.
Distribution: China. Gansu, Hebei, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, India, Kazakhstan, Mongolia, N Myanmar (Burma), Nepal, Pakistan, Russia, Sikkim, Vietnam; Europe, North America]. *Specimen: Meili Team 25435* (PYU, SABG). *Use(s):* medicinal.

Thalictrum atriplex Finet & Gagnep.
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25239* (PYU, SABG). *Use(s):* medicinal.

Thalictrum delavayi Franch.
Distribution: China. W Guizhou, W Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26691* (PYU, SABG). *Use(s):* medicinal.

Thalictrum elegans Wall. ex Royle
Distribution: China. SW Sichuan, S Xizang (Tibet), NW Yunnan [Bhutan, India, Nepal, Pakistan, Sikkim]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Thalictrum finetii B. Boivin
Distribution: China. W Sichuan, SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 26677* (PYU, SABG). *Use(s):* medicinal.

Thalictrum foetidum L.
Distribution: China. Gansu, Hebei, Nei Mongol, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [widely distributed in Asia, Europe]. *Specimen: Meili Team 26652* (PYU, SABG). *Use(s):* none documented.

Thalictrum foliolosum DC.
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [India, Myanmar (Burma), Nepal, Sikkim, Thailand]. *Specimen: Meili Team 24787* (PYU, SABG). *Use(s):* medicinal.

Thalictrum rostellatum Hook. f. & Thomson
Distribution: China. W Sichuan, S Xizang (Tibet), NW Yunnan [Bhutan, NW India, Nepal, Sikkim]. *Specimen: Meili Team 26107* (PYU, SABG). *Use(s):* none documented.

Thalictrum uncatum Maxim.
Distribution: China. Gansu, Guizhou, Qinghai, W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25814* (PYU, SABG). *Use(s):* medicinal.

Thalictrum yunnanense W. T. Wang
Distribution: China. Yunnan. *Specimen: Y. Y. Qian 2927* (PE, type not seen). *Use(s):* medicinal.

Trollius L.

Trollius farreri Stapf
Distribution: China. S Gansu, E & S Qinghai, S Shaanxi, W Sichuan, NE & SE Xizang (Tibet), NW Yunnan. *Specimen: Jan Salick et al. 9548* (MO, SABG). *Use(s):* medicinal.

Trollius pumilus D. Don
Distribution: China. S & SW Gansu, E & S Qinghai, Sichuan, Xizang (Tibet), Yunnan [Bhutan, N Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 26613* (PYU, SABG). *Use(s):* none documented.

Trollius ranunculoides Hemsl.
Distribution: China. S Gansu, E & S Qinghai, W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Jan Salick & Sonam Dorje 9610* (MO, SABG). *Use(s):* medicinal.

Trollius yunnanensis (Franch.) Ulbr.
Distribution: China. S Gansu, Sichuan, W

Yunnan. *Specimen: Fang Zhendong 211* (SABG). *Use(s):* medicinal.

Rhamnaceae

Berchemia Neck. ex DC.

Berchemia flavescens (Wall.) Brongn.

Distribution: China. E Gansu, W Hubei, S Shaanxi, Sichuan, S & SE Xizang (Tibet), NW Yunnan [Bhutan, India, Nepal]. *Specimen: Wayne Law 122* (MO, SABG). *Use(s):* medicinal, firewood.

Berchemia yunnanensis Franch.

Distribution: China. Gansu, Guizhou, Shaanxi, Sichuan, E Xizang (Tibet), Yunnan. *Specimen: Meili Team 24888* (PYU, SABG). *Use(s):* religious, construction, medicinal.

Rhamnus L.

Rhamnus flavescens Y. L. Chen & P. K. Chou

Distribution: China. W Sichuan, E Xizang (Tibet), Yunnan. *Specimen: Meili Team 25198* (PYU, SABG). *Use(s):* none documented.

Rhamnus gilgiana Heppeler

Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Meili Team 26059* (PYU, SABG). *Use(s):* firewood.

Rhamnus tangutica J. J. Vassiljev

Distribution: China. S Gansu, W Henan, Qinghai, C Shaanxi, W Sichuan, E Xizang (Tibet), Yunnan. *Specimen: Wu Sugong et al. WB-119* (KUN). *Use(s):* food.

Rhamnus utilis Decne.

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hunan, Hubei, Jiangsu, Jiangxi, Shaanxi, Shanxi, Sichuan, Yunnan, Zhejiang [Japan, Korea]. *Specimen: Meili Team 27401* (PYU, SABG). *Use(s):* oil, dye.

Sageretia Brogn.

Sageretia horrida Pax & K. Hoffm.

Distribution: China. W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 27239* (PYU, SABG). *Use(s):* food, construction.

Sageretia pycnophylla C. K. Schneid.

Distribution: China. S Gansu, Shaanxi, SW & W Sichuan, Yunnan. *Specimen: Meili Team 26678* (PYU, SABG). *Use(s):* none documented.

Rosaceae

Agrimonia L.

Agrimonia pilosa Ledeb.

Distribution: China. Throughout [Bhutan, N India, Japan, N Laos, Korea, Mongolia, Myanmar (Burma), Nepal, Russia, Sikkim, N Thailand, N Vietnam; E Europe]. *Specimen: Meili Team 26198* (PYU, SABG). *Use(s):* medicinal.

Amygdalus L.

Amygdalus mira (Koehne) Ricker

Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Russia]. Specimen: *George Yatskievych 04-092* (KUN, MO). *Use(s):* medicinal.

Amygdalus persica L.

Distribution: Cultivated worldwide. *Specimen: Meili Team 24684* (PYU, SABG). *Use(s):* food.

Armeniaca Scop.

Armeniaca mume Siebold

Distribution: China. Native in W Sichuan, W Yunnan, cultivated throughout [Japan, Korea, N Laos, N Vietnam]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Armeniaca vulgaris Lam.

Distribution: China. Cultivated throughout [cultivated in temperate areas worldwide]. *Specimen: Danica Anderson 127* (MO, SABG). *Use(s):* food.

Aruncus L.

Aruncus sylvester Kostel. ex Maxim.

Distribution: China. Anhui, Gansu, Guangxi, Heilongjiang, Henan, Hunan, Jiangxi, Jilin, Liaoning, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, NW India (Himachal Pradesh), Japan, Korea, Mongolia, Nepal, Russia, Sikkim; SW Asia, Europe]. *Specimen: Meili Team 25689* (PYU, SABG). *Use(s):* none documented.

Cerasus Mill.

Cerasus caudata (Franch.) T. T. Yu & C. L. Li

Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 27204* (PYU, SABG). *Use(s):* none documented.

Cerasus clarofolia (C. K. Schneid.) T. T. Yu & C. L. Li

Distribution: China. Anhui, S Gansu, Guizhou, Hebei, Henan, Hubei, Hunan, Ningxia, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan, Zhejiang. *Specimen: Meili Team 25188* (PYU, SABG). *Use(s):* none documented.

Cerasus conadenia (Koehne) T. T. Yu & C. L. Li

Distribution: China. Gansu, Guizhou, Henan, Qinghai, Shaanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 24726* (PYU, SABG). *Use(s):* firewood.

Cerasus patentipila (Hand.-Mazz.) T. T. Yu & C. L. Li

Distribution: China. NW Yunnan. *Specimen: Meili Team 25249* (PYU, SABG). *Use(s):* none documented.

Cerasus serrula (Franch.) T. T. Yu & C. L. Li

Distribution: China. Anhui, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Shaanxi, Shandong, Shanxi, Yunnan, Zhejiang [Japan, Korea]. *Specimen: Meili Team 24727* (PYU, SABG). *Use(s):* none documented.

Cerasus tomentosa (Thunb.) Wall. ex T. T. Yu & C. L. Li

Distribution: China. Gansu, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xizang (Tibet), Yunnan [cultivated in temperate E Asia]. *Specimen: George Yatskievych 04-143* (KUN, MO). *Use(s):* food, medicinal.

Cerasus trichostoma (Koehne) T. T. Yu & C. L. Li

Distribution: China. Gansu, Hubei, Qinghai, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25247* (PYU, SABG). *Use(s):* firewood.

Cerasus yunnanensis (Franch.) T. T. Yu & C. L. Li

Distribution: China. Guangxi, W Hubei, Sichuan, Yunnan. *Specimen: Meili Team 25151* (PYU, SABG). *Use(s):* none documented.

Chaenomeles Lindl.

Chaenomeles speciosa (Sweet) Nakai

Distribution: China. Fujian, Gansu, Guangdong, Guizhou, Hubei, Jiangsu, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Myanmar (Burma); cultivated worldwide]. *Specimen: Jan Salick 9739* (MO, SABG). *Use(s):* food, medicinal.

Cotoneaster Medik.

Cotoneaster adpressus Bois

Distribution: China. Gansu, Guizhou, Hubei, Qinghai, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [India, Myanmar (Burma), Nepal]. *Specimen: Meili Team 27527* (PYU, SABG). *Use(s):* medicinal, firewood, ornamental, tools.

Cotoneaster franchetii Bois

Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan [occasionally cultivated worldwide]. *Specimen: Meili Team 24823* (PYU, SABG). *Use(s):* none documented.

Cotoneaster microphyllus Wall. ex Lindl.

Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Kashmir, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 27214* (PYU, SABG). *Use(s):* food, medicinal, forage and/or fodder, handcrafts, tools.

Cotoneaster multiflorus Bunge

Distribution: China. Gansu, Hebei, Heilongjiang, Henan, Hubei, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Russia; C & SW Asia]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Cotoneaster pannosus Franch.

Distribution: China. Sichuan, Yunnan [occasionally cultivated worldwide]. *Specimen: Meilishi Team 292* (PYU, SABG). *Use(s):* none documented.

Cotoneaster rubens W. W. Sm.

Distribution: China. W Sichuan, SE Xizang (Tibet), NW Yunnan [Bhutan, N Myanmar (Burma)]. *Specimen: Meili Team 25261* (PYU, SABG). *Use(s):* none documented.

Cotoneaster sherriffii G. Klotz

Distribution: China. W Sichuan, SE Xizang (Tibet), Yunnan [Bhutan]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Cotoneaster submultiflorus Popov

Distribution: China. Gansu, Hebei, Henan, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shanxi,

Sichuan, Xinjiang, Xizang (Tibet), Yunnan [C Asia]. *Specimen: Meili Team 27235* (PYU, SABG). *Use(s):* firewood, tools.

Dichotomanthes Kurz

Dichotomanthes tristaniicarpa Kurz

Distribution: China. Sichuan, Yunnan. *Specimen: Fang Zhendong 03-23* (SABG). *Use(s):* none documented.

Docynia Decne.

Docynia delavayi (Franch.) C. K. Schneid.

Distribution: China. W Guizhou, W Sichuan, NW Yunnan. *Specimen: Jan Salick 9738* (MO, SABG). *Use(s):* none documented.

Docynia indica (Wall.) Decne.

Distribution: China. SW Sichuan, NE Yunnan [Bhutan, India, Myanmar (Burma), Nepal, Pakistan, Sikkim, Thailand, Vietnam]. *Specimen: Meili Team 27331* (PYU, SABG). *Use(s):* medicinal.

Duchesnea Sm.

Duchesnea chrysantha (Zoll. & Moritzi) Miq.

Distribution: China. Fujian, Guangdong, Guangxi, Shaanxi, Sichuan, Taiwan, Yunnan [India, Indonesia, Japan, Korea, Malaysia]. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn & Yin Xuezhen 356* (MO, SABG). *Use(s):* none documented.

Duchesnea indica (Andrews) Focke

Distribution: China. Widespread [Afghanistan, Bhutan, India, Indonesia, Japan, Korea, Nepal, Sikkim; naturalized in Africa, Europe, North America]. *Specimen: Meili Team 24920* (PYU, SABG). *Use(s):* none documented.

Eriobotrya Lindl.

Eriobotrya japonica (Thunb.) Lindl.

Distribution: China. Native in Chongqing, Hubei, cultivated in Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Taiwan, Yunnan, Zhejiang [cultivated worldwide]. Report based on Fang Zhendong, pers. obs. *Use(s):* food, medicinal.

Fragaria L.

Fragaria gracilis Losinsk.

Distribution: China. Gansu, Henan, Hubei, Qinghai, Shaanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25531* (PYU, SABG). *Use(s):* none documented.

Fragaria moupinensis (Franch.) Cardot

Distribution: China. Gansu, Shaanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25624* (PYU, SABG). *Use(s):* medicinal.

Fragaria nilgerrensis Schltdl. ex J. Gay

Distribution: China. Guizhou, Hubei, Hunan, Shaanxi, Sichuan, Taiwan, Yunnan [E India, Nepal, Sikkim, N Vietnam]. *Specimen: Jessica Woo & Ruth Sherman 511* (MO, SABG). *Use(s):* food, medicinal.

Fragaria orientalis Losinsk.

Distribution: China. Gansu, Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shanxi, Yunnan [Korea, Mongolia, E Russia]. *Specimen: Meili Team 27271* (PYU, SABG). *Use(s):* medicinal.

Geum L.

Geum aleppicum Jacq.

Distribution: China. Gansu, Guizhou, Heilongjiang, Henan, Hubei, Jilin, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Europe, North America]. *Specimen: Meili Team 25208* (PYU, SABG). *Use(s):* medicinal.

Kerria DC.

Kerria japonica (L.) DC.

Distribution: China. Anhui, Fujian, Gansu, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Sichuan, Yunnan, Zhejiang [Japan]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal, ornamental.

Lauro-cerasus Duhamel

Lauro-cerasus sp.

Distribution: China. *Specimen: Wu Sugong et al. WB-090* (KUN). *Use(s):* none documented.

Malus Mill.

Malus ombrophila Hand.-Mazz.

Distribution: China. SW Sichuan, Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 27482* (PYU, SABG). *Use(s):* none documented.

Malus pumila Miller

Distribution: China. Widely cultivated [native

to SW Asia, cultivated worldwide]. *Specimen: George Yatskievych 04-079* (KUN, MO). *Use(s):* food, medicinal.

Malus rockii Rehder

Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan [Bhutan]. *Specimen: Meili Team 24681* (PYU, SABG). *Use(s):* medicinal, ornamental.

Osteomeles Lindl.

Osteomeles schwerinae C. K. Schneid.

Distribution: China. Gansu, Guizhou, Shaanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 27226* (PYU, SABG). *Use(s):* food, medicinal, fertilizer, firestarter.

Padus Mill.

Padus brachypoda (Batalin) C. K. Schneid.

Distribution: China. Anhui, Gansu, Guizhou, Hebei, Henan, W Hubei, Hunan, Ningxia, Shaanxi, Sichuan, Yunnan, Zhejiang. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Padus obtusata (Koehne) T. T. Yu & T. C. Ku

Distribution: China. Anhui, S Gansu, Guizhou, Henan, Hubei, Hunan, Jiangxi, Shaanxi, Shanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang. *Specimen: Meili Team 25267* (PYU, SABG). *Use(s):* none documented.

Photinia Lindl.

Photinia serratifolia (Desf.) Kalkman

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang [S India, Indonesia, Japan, the Philippines]. *Specimen: Meili Team 27223* (PYU, SABG). *Use(s):* medicinal, ornamental.

Potentilla L.

Potentilla anserina L.

Distribution: China. Gansu, Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Asia, Australia, Europe, North America, Pacific Islands, South America]. *Specimen: Meili Team 27966* (PYU, SABG). *Use(s):* medicinal.

Potentilla articulata Franch.

Distribution: SW Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meilishi Team 90* (MO, SABG). *Use(s):* none documented.

Potentilla chinensis Ser.

Distribution: China. Anhui, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Japan, Korea, Mongolia, Russia (Far East)]. *Specimen: Jan Salick et al. 9567* (MO, SABG). *Use(s):* medicinal.

Potentilla conferta Bunge

Distribution: China. Gansu, Hebei, Heilongjiang, Nei Mongol, Shanxi, Sichuan, Xizang (Tibet), Yunnan [Mongolia, Russia]. *Specimen: Meili Team 26572* (PYU, SABG). *Use(s):* medicinal.

Potentilla coriandrifolia D. Don

Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 26227* (PYU, SABG). *Use(s):* none documented.

Potentilla cuneata Wall. ex Lehm.

Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, Kashmir, Nepal, Sikkim]. *Specimen: Ruizi La Team 90* (MO, SABG). *Use(s):* none documented.

Potentilla eriocarpa Wall. ex Lehm.

Distribution: China. Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Kashmir, Nepal, Sikkim]. *Specimen: Heidi Schmidt et al. 4053* (MO, SABG). *Use(s):* none documented.

Potentilla evestita Th. Wolf

Distribution: China. Xinjiang, Yunnan [Mongolia, Russia; C Asia]. *Specimen: Jan Salick et al. 9340* (MO, SABG). *Use(s):* none documented.

Potentilla freyniana Bornm.

Distribution: China. Anhui, Fujian, Gansu, Guizhou, Hebei, Heilongjiang, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shaanxi, Shandong, Shanxi, Sichuan, Yunnan, Zhejiang [Japan, Korea, Russia]. *Specimen: Jan Salick et al. 9358* (MO, SABG). *Use(s):* none documented.

Potentilla fruticosa L.

Distribution: China. Gansu, Hebei, Heilong-

jiang, Jilin, Liaoning, Nei Mongol, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Asia; Europe, North America]. *Specimen: Jessica Woo & Ruth Sherman 488* (MO, SABG). *Use(s):* medicinal, forage and/or fodder, religious, ornamental.

Potentilla glabra Lodd.
Distribution: China. Anhui, Gansu, Hebei, Hubei, Nei Mongol, Qinghai, Shaanxi, Shanxi, Sichuan, Yunnan [Korea, Mongolia, Russia]. *Specimen: Jan Salick & Sonam Dorje 9621* (MO, SABG). *Use(s):* religious, resin.

Potentilla griffithii Hook. f.
Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan [Bhutan, Nepal, Sikkim]. *Specimen: Danica Anderson, Jan Salick & Peiji 161* (MO, SABG). *Use(s):* medicinal.

Potentilla kleiniana Wight & Arn.
Distribution: China. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Shaanxi, Shandong, Sichuan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Indonesia, Japan, Korea, Malaysia, Nepal, Sikkim]. *Specimen: Meili Team 27387* (PYU, SABG). *Use(s):* medicinal.

Potentilla leuconota D. Don
Distribution: China. Hubei, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Bhutan, India, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 24978* (PYU, SABG). *Use(s):* medicinal.

Potentilla macrosepala Cardot
Distribution: China. Xizang (Tibet), Yunnan. *Specimen: Meili Team 26215* (PYU, SABG). *Use(s):* none documented.

Potentilla microphylla D. Don
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, NW India, Nepal, Sikkim]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Potentilla peduncularis D. Don
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, NW India, Nepal, Sikkim]. *Specimen: Fang Zhendong 257* (SABG). *Use(s):* none documented.

Potentilla plumosa T. T. Yu & C. L. Li
Distribution: China. Gansu, Qinghai, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Danica Anderson 58* (MO, SABG). *Use(s):* medicinal.

Potentilla saundersiana Royle
Distribution: China. Gansu, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Meili Team 25862* (PYU, SABG). *Use(s):* medicinal.

Potentilla stenophylla (Franch.) Diels
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Myanmar (Burma), Sikkim]. *Specimen: Meili Team 25863* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Prunus L.—see *Armeniaca*

Prunus domestica L.
Distribution: China. Widely cultivated [cultivated worldwide]. Report based on Fang Zhendong, pers. obs. *Use(s):* food.

Prunus salicina Lindl.
Distribution: China. Cultivated throughout [cultivated worldwide]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Pyracantha M. Roem.

Pyracantha fortuneana (Maxim.) H. L. Li
Distribution: China. Fujian, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Shaanxi, Sichuan, Xizang (Tibet), Yunnan, Zhejiang [cultivated worldwide]. *Specimen: Meili Team 24669* (PYU, SABG). *Use(s):* medicinal, ornamental.

Pyrus L.

Pyrus communis L.
Distribution: China. Widely cultivated [cultivated worldwide]. Report based on Fang Zhendong, pers. obs. *Use(s):* food.

Pyrus pashia Buch.-Ham. ex D. Don
Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Kashmir, Laos, Myanmar (Burma), Nepal, W Pakistan, Sikkim, Thailand, Vietnam]. *Specimen: Meili Team 25193* (PYU, SABG). *Use(s):* food, medicinal.

Pyrus pseudopashia T. T. Yu
Distribution: China. Guizhou, Yunnan. *Specimen: Meili Team 24788* (PYU, SABG). *Use(s):* none documented.

Rosa L.

Rosa deqenensis T. C. Ku
Distribution: China. NW Yunnan. *Specimen: Meili Team 24802* (PYU, SABG). *Use(s):* none documented.

Rosa duplicata T. T. Yu & T. C. Ku
Distribution: China. Xizang (Tibet), Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Rosa farreri Cox
Distribution: China. Gansu, Sichuan, Yunnan. *Specimen: Fang Zhendong 2003-09* (SABG). *Use(s):* none documented.

Rosa filipes Rehder & E. H. Wilson
Distribution: China. Gansu, Shaanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25635* (PYU, SABG). *Use(s):* none documented.

Rosa forrestiana Boulenger
Distribution: China. Sichuan, NW Yunnan. *Specimen: Meili Team 27227* (PYU, SABG). *Use(s):* none documented.

Rosa glomerata Rehder & E. H. Wilson
Distribution: China. Guizhou, Hubei, Sichuan, Yunnan. *Specimen: Meili Team 27231* (PYU, SABG). *Use(s):* none documented.

Rosa graciliflora Rehder & E. H. Wilson
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 28142* (PYU, SABG). *Use(s):* none documented.

Rosa mairei H. Lév.
Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 24834* (PYU, SABG). *Use(s):* medicinal.

Rosa moyesii Hemsl. & E. H. Wilson
Distribution: China. Shaanxi, Sichuan, Yunnan. *Specimen: Fang Zhendong 1683* (SABG). *Use(s):* medicinal.

Rosa multibracteata Hemsl. & E. H. Wilson
Distribution: China. Sichuan, Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Rosa omeiensis Rolfe
Distribution: China. Gansu, Guizhou, Hubei, Ningxia, Qinghai, Shaanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26360* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder, construction.

Rosa prattii Hemsl.
Distribution: Gansu, Sichuan, Yunnan. *Specimen: Meili Team 25812* (PYU, SABG). *Use(s):* none documented.

Rosa sericea Lindl.
Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Myanmar (Burma), Sikkim]. *Specimen: Meili Team 25419* (PYU, SABG). *Use(s):* none documented.

Rosa sikangensis T. T. Yu & T. C. Ku
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 24692* (PYU, SABG). *Use(s):* medicinal.

Rosa soulieana Crép.
Distribution: China. S Anhui, Chongqing, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Fang Zhendong 2003-31* (SABG). *Use(s):* construction.

Rosa weisiensis T. T. Yu & T. C. Ku
Distribution: NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Rosa willmottiae Hemsl.
Distribution: China. Gansu, Qinghai, Shaanxi, Sichuan, Yunnan. *Specimen: Fang Zhendong 262* (SABG). *Use(s):* none documented.

Rubus L.

Rubus alexeterius Focke
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, Nepal]. *Specimen: Wu Sugong et al. WB-058* (KUN). *Use(s):* food.

Rubus aurantiacus Focke
Distribution: China. Guizhou, W Sichuan, SE Xizang (Tibet), Yunnan. *Specimen: Meili Team 27383* (PYU, SABG). *Use(s):* none documented.

Rubus cockburnianus Hemsl.
Distribution: China. Henan, Shaanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 24864* (PYU, SABG). *Use(s):* medicinial, construction.

Rubus flosculosus Focke
Distribution: China. Fujian, Gansu, Henan, Hubei, Shaanxi, Shanxi, Sichuan, Yunnan, Xizang (Tibet), Zhejiang. *Specimen: Meili Team*

27217 (PYU, SABG). *Use(s):* none documented.

Rubus fockeanus Kurz

Distribution: China. Hubei, Sichuan, S Xizang (Tibet), Yunnan [Bhutan, N Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 25674* (PYU, SABG). *Use(s):* food, medicinal.

Rubus fragarioides Bertol.

Distribution: China. W Sichuan, Xizang (Tibet), NW Yunnan [Bhutan, NE India, N Myanmar (Burma), Nepal, Sikkim]. *Specimen: Jessica Woo, Ruth Sherman & Jan Salick 689* (MO, SABG). *Use(s):* none documented.

Rubus idaeopsis Focke

Distribution: China. Fujian, Gansu, Guangxi, Guizhou, Henan, Jiangxi, Shaanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25174* (PYU, SABG). *Use(s):* medicinal.

Rubus innominatus S. Moore

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Yunnan, Zhejiang. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Rubus irritans Focke

Distribution: China. Gansu, Qinghai, Sichuan, SE Xizang (Tibet), Yunnan [Afghanistan, Bhutan, NW India, Kashmir, Pakistan]. *Specimen: Meili Team 25524* (PYU, SABG). *Use(s):* none documented.

Rubus lutescens Franch.

Distribution: China. Sichuan, E Xizang (Tibet), Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Rubus niveus Thunb.

Distribution: China. Gansu, Guangxi, Guizhou, Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, India, Indonesia, Kashmir, Laos, Malaysia, Myanmar (Burma), Nepal, the Philippines, Sikkim, Sri Lanka, Thailand, Vietnam; Americas]. *Specimen: Meili Team 26448* (PYU, SABG). *Use(s):* food, medicinal.

Rubus stans Focke

Distribution: China. Qinghai, Sichuan, E Xizang (Tibet), Yunnan. *Specimen: Meili Team 25266* (PYU, SABG). *Use(s):* none documented.

Rubus stimulans Focke

Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25649* (PYU, SABG). *Use(s):* none documented.

Sibbaldia L.

Sibbaldia cuneata Hornem. ex Kuntze

Distribution: China. Qinghai, Sichuan, Taiwan, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, Nepal, Pakistan, Russia, Sikkim]. *Specimen: Fang Zhendong 1681* (SABG). *Use(s):* none documented.

Sibbaldia micropetala (D. Don) Hand.-Mazz.

Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, NW India, Nepal, Sikkim]. *Specimen: Jessica Woo & Ruth Sherman 416* (MO, SABG). *Use(s):* medicinal.

Sibbaldia purpurea Royle

Distribution: China. Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, NW India, Nepal, Sikkim]. *Specimen: Fang Zhendong 105* (SABG). *Use(s):* none documented.

Sibiraea Maxim.

Sibiraea angustata (Rehder) Hand.-Mazz.

Distribution: China. Gansu, Qinghai, Sichuan, Xizang (Tibet), Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Sorbaria (Ser.) A. Braun

Sorbaria arborea C. K. Schneid.

Distribution: China. Gansu, Guizhou, Hubei, Jiangxi, Shaanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan. *Specimen: Meili Team 24709* (PYU, SABG). *Use(s):* medicinal, religious, construction.

Sorbus L.

Sorbus filipes Hand.-Mazz.

Distribution: China. Xizang (Tibet), NW Yunnan [N Myanmar (Burma)]. *Specimen: Meili Team 25397* (PYU, SABG). *Use(s):* none documented.

Sorbus glomerulata Koehne

Distribution: China. Hubei, Sichuan, Yunnan. *Specimen: Wu Sugong et al. WB-143* (KUN). *Use(s):* none documented.

Sorbus hemsleyi (C. K. Schneid.) Rehder

Distribution: China. Anhui, Fujian, Gansu, Guangxi, Guizhou, Hubei, Hunan, Jiangxi,

Shaanxi, Sichuan, Yunnan, Zhejiang. *Specimen: Meili Team 27481* (PYU, SABG). *Use(s):* ornamental, forage and/or fodder.

Sorbus hupehensis C. K. Schneid.
Distribution: China. Anhui, Gansu, Guizhou, Hubei, Jiangxi, Qinghai, Shaanxi, Shandong, Sichuan, Yunnan. *Specimen: Meili Team 28240* (PYU, SABG). *Use(s):* ornamental, forage and/or fodder, tools.

Sorbus monbeigii (Cardot) Balakr.
Distribution: China. NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* ornamental, forage and/or fodder.

Sorbus oligodonta (Cardot) Hand.-Mazz.
Distribution: China. W Sichuan, SE Xizang (Tibet), NW Yunnan [Myanmar (Burma)]. *Specimen: Meili Team 25466* (PYU, SABG). *Use(s):* ornamental, forage and/or fodder.

Sorbus pallescens Rehder
Distribution: China. W Sichuan, S Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 24850* (PYU, SABG). *Use(s):* ornamental, forage and/or fodder.

Sorbus poteriifolia Hand.-Mazz.
Distribution: China. NW Yunnan [N Myanmar (Burma)]. *Specimen: Meili Team 24931* (PYU, SABG). *Use(s):* ornamental, forage and/or fodder, firewood.

Sorbus prattii Koehne
Distribution: China. W Sichuan, S Xizang (Tibet), C & NW Yunnan [Myanmar (Burma), Sikkim]. *Specimen: Meili Team 26411* (PYU, SABG). *Use(s):* medicinal, ornamental, forage and/or fodder.

Sorbus pteridophylla Hand.-Mazz.
Distribution: China. Xizang (Tibet), Yunnan [N Myanmar (Burma)]. *Specimen: Meili Team 26443* (PYU, SABG). *Use(s):* ornamental, forage and/or fodder, firewood.

Sorbus rehderiana Koehne
Distribution: China. Qinghai, Sichuan, Xizang (Tibet), Yunnan [N Myanmar (Burma)]. *Specimen: Meili Team 24998* (PYU, SABG). *Use(s):* ornamental, forage and/or fodder.

Sorbus rufopilosa C. K. Schneid.
Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, N Myanmar (Burma), Nepal, Sikkim]. *Specimen: Fang Zhendong 1684* (SABG). *Use(s):* ornamental, forage and/or fodder, firewood.

Sorbus thibetica (Cardot) Hand.-Mazz.
Distribution: China. SE Xizang (Tibet), NW Yunnan [Bhutan, N Myanmar (Burma)]. *Specimen: Meili Team 25457* (PYU, SABG). *Use(s):* ornamental, forage and/or fodder.

Sorbus vilmorinii C. K. Schneid.
Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* ornamental, forage and/or fodder.

Spiraea L.

Spiraea dahurica (Rupr.) Maxim.
Distribution: China. Hebei, Heilongjiang, Liaoning, Nei Mongol, Yunnan [Mongolia, Russia]. *Specimen: Jan Salick et al. 9539* (MO, SABG). *Use(s):* none documented.

Spiraea japonica L. f.
Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Sichuan, Xizang (Tibet), Yunnan, Zhejiang [Japan, Korea; cultivated worldwide]. *Specimen: Meili Team 25796* (PYU, SABG). *Use(s):* none documented.

Spiraea myrtilloides Rehder
Distribution: China. Gansu, Henan, Hubei, Jiangxi, Qinghai, Shaanxi, Sichuan, Xizang (Tibet), Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Spiraea schneideriana Rehder
Distribution: China. Fujian, Gansu, Hubei, Shaanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25420* (PYU, SABG). *Use(s):* medicinal.

Spiraea veitchii Hemsl.
Distribution: China. Gansu, Guizhou, Henan, Hubei, Shaanxi, Sichuan, Yunnan. *Specimen: Meili Team 25189* (PYU, SABG). *Use(s):* none documented.

Rubiaceae

Galium L.

Galium aparine L.

Distribution: China. Throughout except Hainan [India, Japan, Korea, Nepal, Russia, Sikkim, Pakistan; Africa, Europe, North America]. *Specimen: Jun Wen 1303* (KUN). *Use(s):* none documented.

Galium asperifolium Wall. ex Roxb.

Distribution: China. Guizhou, Sichuan, Xizang (Tibet), Yunnan [Afghanistan, India, Nepal, Pakistan, Sikkim, Bengal, Thailand]. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn & Yin Xuezhen 369* (MO, SABG). *Use(s):* forage and/or fodder, pesticide.

Galium asperuloides Edgew.

Distribution: China. Anhui, Gansu, Guizhou, Heilongjiang, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Japan, Korea, Myanmar (Burma), Nepal, Pakistan, Russia, Sikkim]. *Specimen: Wayne Law 87* (MO, SABG). *Use(s):* medicinal.

Leptodermis Wall.

Leptodermis dielsiana H. J. P. Winkl.

Distribution: China. Yunnan. *Specimen: George Yatskievych 04-117* (KUN, MO). *Use(s):* none documented.

Leptodermis forrestii Diels

Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn, Yin Xuezhen & Senadorji 325* (MO, SABG). *Use(s):* firewood.

Leptodermis potanini Batalin

Distribution: China. Guizhou, Hubei, S Shanxi, Sichuan, Yunnan. *Specimen: Wu Sugong et al. WB-038* (KUN). *Use(s):* firewood, fertilizer.

Rubia L.

Rubia argyi (H. Lév. & Vaniot) H. Hara ex. Lauener & D. K. Ferguson

Distribution: China. Fujian, Guangxi, Guangdong, Henan, Hubei, Hunan, Jiangsu, Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang [Japan, Korea]. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn, Yin Xuezhen & Senadorji 297* (MO, SABG). *Use(s):* medicinal.

Rubia cordifolia L.

Distribution: China. NE, N & NW China, Sichuan, Xizang (Tibet), Yunnan [Japan, Korea, Russia; Africa]. *Specimen: George Yatskievych 04-164* (KUN, MO). *Use(s):* medicinal, forage and/or fodder.

Rubia manjith Roxb. ex Fleming

Distribution: China. Qinghai, Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal]. *Specimen: Wu et al. WB-190* (KUN). *Use(s):* none documented.

Rubia oncotricha Hand.-Mazz.

Distribution: China. Guangxi, Guizhou, Sichuan, Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Rubia podantha Diels

Distribution: China. W Guangxi, W Sichuan, Yunnan. *Specimen: George Yatskievych 04-164* (KUN, MO). *Use(s):* medicinal.

Rutaceae

Boenninghausenia Rchb. ex Meisn.

Boenninghausenia albiflora (Hook.) Rchb. ex Meisn.

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Taiwan, SE Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Indonesia, Japan, Kashmir, Laos, Myanmar (Burma), Nepal, Pakistan, the Philippines, Thailand, N Vietnam]. *Specimen: Meili Team 26625* (PYU, SABG). *Use(s):* medicinal.

Citrus L.

Citrus ×aurantium L.

Distribution: China. Widely cultivated and sometimes naturalized [cultivated worldwide]. *Specimen: Jan Salick 9744* (MO, SABG). *Use(s):* food.

Tetradium Lour.

Tetradium daniellii (Benn.) T. G. Hartley

Distribution: China. Anhui, S Gansu, Guizhou, Hebei, Henan, Hubei, Jiangsu, Liaoning, S Ningxia, E Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, SE Xizang (Tibet), Yunnan [Korea]. *Specimen: Meili Team 26670* (PYU, SABG). *Use(s):* medicinal.

Tetradium ruticarpum (A. Juss.) T. G. Hartley

Distribution: China. Anhui, Fujian, S Gansu,

Guangdong, Guangxi, Guizhou, Hebei, S Henan, Hubei, Hunan, S Jiangsu, Jiangxi, S Shaanxi, Sichuan, Yunnan, Zhejiang [Bhutan, NE India, Myanmar (Burma), Nepal]. *Specimen: Meili Team 24781* (PYU, SABG). *Use(s):* none documented.

Zanthoxylum L.

Zanthoxylum bungeanum Maxim.

Distribution: China. Anhui, Fujian, Gansu, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, SE Xinjiang, S & SE Xizang (Tibet), Yunnan, Zhejiang [Bhutan]. *Specimen: Meili Team 24711* (PYU, SABG). *Use(s):* food, medicinal, herb and/or spice.

Zanthoxylum esquirolii H. Lév.

Distribution: China. Guizhou, Sichuan, Yunnan. *Specimen: Meili Team 25462* (PYU, SABG). *Use(s):* medicinal, pesticide.

Zanthoxylum nitidum (Roxb.) DC.

Distribution: China. Fujian, Guangdong, Guangxi, S & SE Guizhou, Hainan, S Hunan, Taiwan, Yunnan, S Zhejiang [India, Indonesia, Japan (Ryukyu Islands), Malaysia, Myanmar (Burma), Nepal, Papua New Guinea, the Philippines, Thailand, Vietnam; Australia, SW Pacific Islands]. *Specimen: Meili Team 27380* (PYU, SABG). *Use(s):* medicinal.

Zanthoxylum simulans Hance

Distribution: China. Anhui, Fujian, Gansu, N Guangdong, NE Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Qinghai, Shaanxi, Shandong, Taiwan, Yunnan, Zhejiang. *Specimen: Meili Team 24872* (PYU, SABG). *Use(s):* none documented.

Sabiaceae

Meliosma Blume

Meliosma cuneifolia Franch.

Distribution: China. Anhui, E Gansu, Guizhou, Henan, Hubei, Hunan, S Shaanxi, Shanxi, Sichuan, S Xizang (Tibet), C & N Yunnan. *Specimen: Meili Team 25052* (PYU, SABG). *Use(s):* medicinal, firewood.

Meliosma flexuosa Pamp.

Distribution: China. Anhui, Fujian, N Guangdong, Guizhou, Henan, W Hubei, Hunan, Jiangsu, Jiangxi, S Shaanxi, E Sichuan, Yunnan, Zhejiang. *Specimen: Kurt Hoffmeister, Deng Zhiwei & Anthony Amend 88* (MO, SABG). *Use(s):* none documented.

Sabia Colebr.

Sabia yunnanensis Franch.

Distribution: China. Anhui, Guizhou, Henan, Hubei, Jiangxi, Sichuan, Xizang (Tibet), C & NW Yunnan [Bhutan, Nepal]. *Specimen: Meili Team 27416* (PYU, SABG). *Use(s):* medicinal.

Salicaceae

Populus L.

Populus davidiana Dode

Distribution: China. Anhui, Gansu, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan [Korea, Mongolia, E Russia]. *Specimen: Meili Team 25703* (PYU, SABG). *Use(s):* firewood, construction, tools.

Populus haoana W. C. Cheng & Z. Wang

Distribution: China. SE Sichuan, NW & S Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Populus lasiocarpa Oliv.

Distribution: China. Guizhou, Hubei, Shaanxi, Sichuan, Yunnan. *Specimen: Meili Team 24837* (PYU, SABG). *Use(s):* none documented.

Populus rotundifolia Griff.

Distribution: China. Gansu, Guizhou, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan]. *Specimen: Meili Team 25943* (PYU, SABG). *Use(s):* firewood, construction.

Populus szechuanica C. K. Schneid.

Distribution: China. Gansu, Shaanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Fang Zhendong 2003-19* (SABG). *Use(s):* none documented.

Populus trinervis Z. Wang & S. L. Tung

Distribution: China. Sichuan, Yunnan. *Specimen: Meili Team 25459* (PYU, SABG). *Use(s):* none documented.

Populus wilsonii C. K. Schneid.

Distribution: China. Gansu, Hubei, Shaanxi,

Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 25944* (PYU, SABG). *Use(s):* none documented.

Populus yunnanensis Dode

Distribution: China. Guizhou, Sichuan, Yunnan. *Specimen: Meili Team 25148* (PYU, SABG). *Use(s):* none documented.

Salix L.

Salix annulifera C. Marquand & Airy Shaw

Distribution: China. E Xizang (Tibet), NW Yunnan. *Specimen: T. T. Yu 9050* (KUN, type not seen). *Use(s):* none documented.

Salix atopantha C. K. Schneid.

Distribution: China. S Gansu, SE Qinghai, NW Sichuan, E Xizang (Tibet), Yunnan. *Specimen: Meili Team 25338* (PYU, SABG). *Use(s):* none documented.

Salix balfouriana C. K. Schneid.

Distribution: China. Sichuan, NW Yunnan. *Specimen: Meili Team 25894* (PYU, SABG). *Use(s):* none documented.

Salix brachista C. K. Schneid.

Distribution: China. W Sichuan, E Xizang (Tibet), W Yunnan. *Specimen: Fang Zhendong & He Guang 511* (SABG). *Use(s):* none documented.

Salix calyculata Hook. f. ex Andersson

Distribution: China. S Xizang (Tibet), NW Yunnan [Bhutan, Sikkim]. *Specimen: Meili Team 26842* (PYU, SABG). *Use(s):* none documented.

Salix cathayana Diels

Distribution: China. Guizhou, Hebei, Henan, Hubei, Shaanxi, Sichuan, Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Salix coggygria Hand.-Mazz.

Distribution: China. E Xizang (Tibet), NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Salix daliensis C. F. Fang & S. D. Zhao

Distribution: China. SW Hubei, S Sichuan, Yunnan. *Specimen: Meili Team 25154* (PYU, SABG). *Use(s):* none documented.

Salix glareorum Mao & W. Z. Li

Distribution: China. NW Yunnan. *Specimen: Meili Team 25347* (PYU, SABG). *Use(s):* none documented.

Salix guebriantiana C. K. Schneid.

Distribution: China. Sichuan, NW Yunnan. *Specimen: Meili Team 25357* (PYU, SABG). *Use(s):* none documented.

Salix lindleyana Wall. ex Andersson

Distribution: China. Xizang (Tibet), NW Yunnan [Bhutan, Nepal, Pakistan, Sikkim]. *Specimen: Meili Team 28097* (PYU, SABG). *Use(s):* none documented.

Salix longiflora Wall. ex Andersson

Distribution: China. W Sichuan, Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: George Yatskievych 04-010* (KUN, MO). *Use(s):* none documented.

Salix luctuosa H. Lév.

Distribution: China. Guizhou, SW Shaanxi, Sichuan, E Xizang (Tibet), Yunnan. *Specimen: Meili Team 25361* (PYU, SABG). *Use(s):* none documented.

Salix magnifica Hemsl.

Distribution: China. N & W Sichuan, Yunnan. *Specimen: Meili Team 24915* (PYU, SABG). *Use(s):* none documented.

Salix myrtillacea Andersson

Distribution: China. SE Gansu, Qinghai, W Sichuan, Xizang (Tibet), NW Yunnan [Bhutan, India, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 25076* (PYU, SABG). *Use(s):* none documented.

Salix oreinoma C. K. Schneid.

Distribution: China. W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25541* (PYU, SABG). *Use(s):* none documented.

Salix oreophila Hook. f. ex Andersson

Distribution: China. Xizang (Tibet), NW Yunnan [Bhutan, India, Nepal, Sikkim]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Salix ovatomicrophylla K. S. Hao ex C. F. Fang & A. K. Skvortsov

Distribution: China. W Sichuan, Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 25529* (PYU, SABG). *Use(s):* none documented.

Salix paraflabellaris S. D. Zhao
Distribution: China. NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Salix pilosomicrophylla Z. Wang & P. Y. Fu
Distribution: China. E Xizang (Tibet), Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Salix piptotricha Hand.-Mazz.
Distribution: China. NW Yunnan. *Specimen: Meili Team 25905* (PYU, SABG). *Use(s):* none documented.

Salix pseudowallichiana Goerz ex Rehder & Kobuski
Distribution: China. E Qinghai, Shanxi, N Sichuan, Yunnan. *Specimen: George Yatskievych 04-031* (KUN, MO). *Use(s):* construction, medicinal, veterinary, firewood, fertilizer, handcrafts, tools.

Salix pseudowolohoensis K. S. Hao ex C. F. Fang & A. K. Skvortsov
Distribution: China. Sichuan, NW Yunnan. *Specimen: Meili Team 25355* (PYU, SABG). *Use(s):* none documented.

Salix radinostachya C. K. Schneid.
Distribution: China. W Sichuan, E Xizang (Tibet), NW Yunnan [Sikkim]. *Specimen: Meili Team 24819* (PYU, SABG). *Use(s):* none documented.

Salix rehderiana C. K. Schneid.
Distribution: China. Gansu, Ningxia, Qinghai, Shaanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 24707* (PYU, SABG). *Use(s):* none documented.

Salix resectoides Hand.-Mazz.
Distribution: China. E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 26266* (PYU, SABG). *Use(s):* none documented.

Salix sericocarpa Andersson
Distribution: China. Xizang (Tibet), Yunnan [Afghanistan, Kashmir, Nepal, Pakistan]. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn, Yin Xuezhen & Senadorji 279* (MO, SABG). *Use(s):* firewood, handcrafts.

Salix sikkimensis Andersson
Distribution: China. Xizang (Tibet), Yunnan [Bhutan, India, Nepal, Sikkim]. *Specimen: Meili Team 24806* (PYU, SABG). *Use(s):* none documented.

Salix souliei Seemen
Distribution: China. SE Qinghai, W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Jessica Woo 693A* (MO, SABG). *Use(s):* none documented.

Salix spodiophylla Hand.-Mazz.
Distribution: China. Sichuan, NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Salix tetrasperma Roxb.
Distribution: China. S Guangdong, Hainan, S Xizang (Tibet), S & SW Yunnan [India, Indonesia, Malaysia, Myanmar (Burma), Pakistan, the Philippines, Thailand, Vietnam]. *Specimen: Meili Team 27354* (PYU, SABG). *Use(s):* none documented.

Salix vaccinioides Hand.-Mazz.
Distribution: China. E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 24777* (PYU, SABG). *Use(s):* none documented.

Salix wallichiana Andersson
Distribution: China. SE Gansu, Guizhou, Hebei, Hubei, Hunan, Nei Mongol, S Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan, Zhejiang [Afghanistan, Bhutan, India, Nepal, Pakistan]. *Specimen: Fang Zhendong 2003-20* (SABG). *Use(s):* medicinal.

Salix zangica N. Chao
Distribution: China. E Xizang (Tibet), Yunnan. *Specimen: Jan Salick et al. 9352* (MO, SABG). *Use(s):* tools.

Santalaceae

Arceuthobium M. Bieb.

Arceuthobium pini Hawksw. & Wiens
Distribution: China. SW Sichuan, Xizang (Tibet), NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Korthalsella Tiegh.

Korthalsella japonica (Thunb.) Engl.
Distribution: China. Fujian, S Gansu, Guang-

dong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, S Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Indonesia, Japan, Malaysia, Myanmar (Burma), Pakistan, the Philippines, Sri Lanka, Thailand, Vietnam; E Africa, Madagascar]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Osyris L.

Osyris quadripartita Salzm. ex Decne.
Distribution: China. Guangxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, Cambodia, India, Laos, Myanmar (Burma), Nepal, Sri Lanka, Thailand, Vietnam; Africa, S Europe]. *Specimen: Meili Team 26032* (PYU, SABG). *Use(s):* none documented.

Thesium L.

Thesium ramosoides Hendrych
Distribution: China. Sichuan, Yunnan. *Specimen: Meili Team 25287* (PYU, SABG). *Use(s):* medicinal.

Viscum L.

Viscum liquidambaricola Hayata
Distribution: China. Fujian, S Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, S Shaanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Indonesia, Malaysia, Nepal, Sikkim, Thailand, Vietnam]. *Specimen: Meili Team 27460* (PYU, SABG). *Use(s):* medicinal.

Sapindaceae

Acer L.

Acer acuminatum Wall. ex D. Don
Distribution: China. S Xizang (Tibet), Yunnan [India, Kashmir, Nepal, Pakistan]. *Specimen: Meili Team 28019* (PYU, SABG). *Use(s):* handcrafts.

Acer caesium Wall. ex Brandis
Distribution: China. SW Henan, SE Gansu, W Hubei, Ningxia, S Shaanxi, Sichuan, SE Xizang (Tibet), NW Yunnan [India, Nepal, Pakistan]. *Specimen: Meili Team 27264* (PYU, SABG). *Use(s):* handcrafts.

Acer campbellii Hook. f. & Thomson
Distribution: China. S Sichuan, SW Xizang (Tibet), NW Yunnan [Bhutan, N India, Myanmar (Burma), Nepal, Vietnam]. *Specimen: Meili Team 27485* (PYU, SABG). *Use(s):* handcrafts.

Acer cappadocicum Gled.
Distribution: China. Guizhou, W Hubei, S Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, N India, Kashmir, Nepal, Pakistan; SW Asia, S Europe]. *Specimen: Meili Team 27538* (PYU, SABG). *Use(s):* handcrafts, forage and fodder, construction.

Acer davidii Franch.
Distribution: China. Anhui, Fujian, SE Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Ningxia, S Shaanxi, Shanxi, Sichuan, Yunnan, Zhejiang [Myanmar (Burma); cultivated worldwide]. *Specimen: Fang Zhendong 1804* (SABG). *Use(s):* food, medicinal, handcrafts, tools.

Acer erianthum Schwer.
Distribution: China. S Gansu, N Guangxi, W Hubei, S Shaanxi, Sichuan, Yunnan. *Specimen: Meili Team s.n.* (PYU, SABG). *Use(s):* medicinal, handcrafts.

Acer flabellatum Rehder
Distribution: China. Guangxi, Guizhou, W Hubei, Jiangxi, Sichuan, Yunnan [Myanmar (Burma), Vietnam]. *Specimen: Kurt Hoffmeister, Deng Zhiwei & Anthony Amend 9* (MO, SABG). *Use(s):* handcrafts, forage and/or fodder.

Acer laxiflorum Pax
Distribution: China. Sichuan, Yunnan. *Specimen: Meili Team 25563* (PYU, SABG). *Use(s):* handcrafts, firewood.

Acer pectinatum Wall. ex G. Nicholson
Distribution: China. W Sichuan, E & S Xizang (Tibet), NW Yunnan [Bhutan, NE India, NE Myanmar (Burma), Nepal]. *Specimen: Fang Zhendong 1583* (SABG). *Use(s):* handcrafts, forage and/or fodder.

Acer pictum Thunb.
Distribution: China. Anhui, Gansu, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jilin, Liaoning, Nei Mongol, Shaanxi, Shanxi, Sichuan, SE Xizang (Tibet), Yunnan, Zhejiang [Japan, Korea, Mongolia, E Russia]. *Specimen:*

Jessica Woo & Ruth Sherman 467 (MO, SABG). *Use(s):* handcrafts.

Acer sikkimense Miq.
Distribution: China. SE Xizang (Tibet), Yunnan [Bhutan, N India, N Myanmar (Burma), Nepal]. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn, Yin Xuezhen & Senadorji 296* (MO, SABG). *Use(s):* handcrafts, forage and/or fodder, firewood.

Acer stachyophyllum Hiern
Distribution: China. S Gansu, W Henan, W Hubei, Ningxia, Sichuan, S Shaanxi, S & SE Xizang (Tibet), NW Yunnan [Bhutan, N India, Myanmar (Burma), Nepal]. Report based on Fang Zhendong, pers. obs. *Use(s):* handcrafts, forage and/or fodder.

Acer tenellum Pax
Distribution: China. W Hubei, E & SE Sichuan, Yunnan. *Specimen: Meili Team 25082* (PYU, SABG). *Use(s):* medicinal, handcrafts.

Acer wardii W. W. Sm.
Distribution: China. W Xizang (Tibet), NW Yunnan [NE India, NE Myanmar (Burma)]. Report based on Fang Zhendong, pers. obs. *Use(s):* handcrafts.

Saxifragaceae

Bergenia Moench

Bergenia purpurascens (Hook. f. & Thomson) Engl.
Distribution: China. SW Sichuan, E & S Xizang (Tibet), N Yunnan [N Bhutan, NE India, N Myanmar (Burma), Nepal, Sikkim]. *Specimen: Liu Lin 5* (SABG). *Use(s):* medicinal, forage and/or fodder.

Chrysosplenium L.

Chrysosplenium forrestii Diels
Distribution: China. SE Xizang (Tibet), NW Yunnan [Bhutan, N India, N Myanmar (Burma), Nepal]. *Specimen: Meili Team 28068* (PYU, SABG). *Use(s):* none documented.

Chrysosplenium fuscopuncticulosum Z. P. Jien
Distribution: NW Yunnan. *Specimen: Meilishi Team 87* (PYU, SABG). *Use(s):* none documented.

Chrysosplenium griffithii Hook. f. & Thomson
Distribution: China. S Gansu, S Qinghai, S Shaanxi, N & W Sichuan, SE Xizang (Tibet), N Yunnan [Bhutan, N India, N Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 25602* (PYU, SABG). *Use(s):* medicinal.

Chrysosplenium nepalense D. Don
Distribution: China. Sichuan, Xizang (Tibet), Yunnan [Bhutan, N India, N Myanmar (Burma), Nepal, Sikkim]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Chrysosplenium nudicaule Bunge
Distribution: China. Gansu, Qinghai, Xinjiang, E Xizang (Tibet), NW Yunnan [Mongolia, Nepal, Russia]. *Specimen: Meili Team 25908* (PYU, SABG). *Use(s):* medicinal.

Chrysosplenium sikangense H. Hara
Distribution: China. SE Xizang (Tibet), NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Deutzia Thunb.—see Hydrangeaceae

Hydrangea L.—see Hydrangeaceae

Parnassia L.—see Celastraceae

Philadelphus L.—see Hydrangeaceae

Ribes L.—see Grossulariaceae

Rodgersia A. Gray

Rodgersia aesculifolia Batalin
Distribution: China. SE Gansu, W Henan, W Hubei, S Ningxia, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Myanmar (Burma)]. *Specimen: Meili Team 28172* (PYU, SABG). *Use(s):* none documented.

Rodgersia pinnata Franch.
Distribution: China. Guizhou, E & S Sichuan, Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Saxifraga L.

Saxifraga brunonis Wall. ex Ser.
Distribution: China. Sichuan, S Xizang (Tibet), W Yunnan [Bhutan, India, Kashmir, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 26102* (PYU, SABG). *Use(s):* none documented.

Saxifraga candelabrum Franch.
Distribution: China. NW Sichuan, N Yunnan. *Specimen: Fang Zhendong 1814* (SABG). *Use(s):* medicinal.

Saxifraga caveana W. W. Sm.
Distribution: China. S Xizang (Tibet), Yunnan

[Bhutan, Nepal, Sikkim]. *Specimen: Fang Zhendong 246* (SABG). *Use(s):* none documented.

Saxifraga cernua L.
Distribution: China. WC Hebei, S Jilin, E Nei Mongol, N Ningxia, Qinghai, S Shaanxi, N Shanxi, W Sichuan, Xinjiang, Xizang (Tibet), NW Yunnan [India, Japan, Korea, Mongolia, Russia; Europe, North America]. *Specimen: Meili Team 26104* (PYU, SABG). *Use(s):* none documented.

Saxifraga coarctata W. W. Sm.
Distribution: China. Sichuan, Xizang (Tibet), NW Yunnan [Bhutan, Nepal, Sikkim]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Saxifraga deqenensis C. Y. Wu
Distribution: China. NW Yunnan. *Specimen: Qinghai-Xizang Expedition 2359A* (PE, type not seen). *Use(s):* none documented.

Saxifraga diversifolia Wall. ex Ser.
Distribution: China. W Sichuan, SE Xizang (Tibet), N Yunnan [Bhutan, Kashmir, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Jessica Woo & Ruth Sherman 535* (MO, SABG). *Use(s):* none documented.

Saxifraga drabiformis Franch.
Distribution: China. Yunnan. *Specimen: Meilishi Team 71* (PYU, SABG). *Use(s):* none documented.

Saxifraga draboides C. Y. Wu
Distribution: China. W Sichuan, NW Yunnan. *Specimen: Meili Team 25902* (PYU, SABG). *Use(s):* none documented.

Saxifraga egregia Engl.
Distribution: China. S Gansu, E & S Qinghai, W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 26291* (PYU, SABG). *Use(s):* none documented.

Saxifraga elatinoides Hand.-Mazz.
Distribution: China. SW Sichuan, NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Saxifraga filicaulis Wall. ex Ser.
Distribution: China. EC Shaanxi, W Sichuan, S Xizang (Tibet), E & NW Yunnan [Bhutan, India, Kashmir, Nepal, Sikkim]. *Specimen: Fang Zhendong 1589* (SABG). *Use(s):* none documented.

Saxifraga finitima W. W. Sm.
Distribution: China. W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 26316* (PYU, SABG). *Use(s):* none documented.

Saxifraga flexilis W. W. Sm.
Distribution: China. SW Sichuan, NW Yunnan. *Specimen: F. Kingdon-Ward 45* (E, type not seen). *Use(s):* none documented.

Saxifraga georgei J. Anthony
Distribution: China. SW Sichuan, SE Xizang (Tibet), NW Yunnan [Bhutan, Nepal, Sikkim]. *Specimen: Meili Team 26708* (PYU, SABG). *Use(s):* none documented.

Saxifraga glabricaulis Harry Sm.
Distribution: China. SE Xizang (Tibet), Yunnan [Bhutan, Nepal, Sikkim]. *Specimen: Fang Zhendong 1709* (SABG). *Use(s):* none documented.

Saxifraga hirculus L.
Distribution: China. Shanxi, W Sichuan, Xinjiang, Xizang (Tibet), NW Yunnan [Kashmir, Kazakhstan, Mongolia, Russia, Sikkim, Tajikistan; C & N Europe, North America]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Saxifraga hispidula D. Don
Distribution: China. C Sichuan, S Xizang (Tibet), NW Yunnan [Bhutan, N India, N Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 26880* (PYU, SABG). *Use(s):* none documented.

Saxifraga hypericoides Franch.
Distribution: China. Sichuan, Yunnan. *Specimen: Meili Team 26537* (PYU, SABG). *Use(s):* none documented.

Saxifraga imparilis Balf. f.
Distribution: China. Yunnan. *Specimen: Meilishi Team 54* (PYU, SABG). *Use(s):* none documented.

Saxifraga jacquemontiana Decne.
Distribution: China. SE Xizang (Tibet), Yunnan [Bhutan, India, Kashmir, Nepal, Sikkim]. *Specimen: Fang Zhendong 249* (SABG). *Use(s):* none documented.

Saxifraga likiangensis Franch.
Distribution: China. S Qinghai, C Sichuan, E & S Xizang (Tibet), NW Yunnan [Bhutan, Myanmar (Burma)]. *Specimen: Meili Team 27504* (PYU, SABG). *Use(s):* none documented.

Saxifraga macrostigmatoides Engl.
Distribution: China. W Sichuan, Xizang (Tibet), NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Saxifraga melanocentra Franch.
Distribution: China. S Gansu, Qinghai, Shaanxi, W Sichuan, Xizang (Tibet), Yunnan [Bhutan, Kashmir, Nepal, Sikkim]. *Specimen: Meili Team 26437* (PYU, SABG). *Use(s):* medicinal.

Saxifraga montanella Harry Sm.
Distribution: China. E & S Qinghai, Sichuan, E & S Xizang (Tibet), NW Yunnan [Bhutan, Nepal]. *Specimen: Meili Team 26286* (PYU, SABG). *Use(s):* none documented.

Saxifraga mucronulata Royle
Distribution: China. Sichuan, S Xizang (Tibet), Yunnan [India, Kashmir, Nepal, Sikkim]. *Specimen: Meili Team 26574* (PYU, SABG). *Use(s):* none documented.

Saxifraga nana Engl.
Distribution: China. Gansu, S Qinghai, W Sichuan, Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Saxifraga nanella Engl. & Irmsch.
Distribution: China. Qinghai, S Xinjiang, Xizang (Tibet), NW Yunnan [Nepal]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Saxifraga nanelloides C. Y. Wu
Distribution: China. NW Yunnan. *Specimen: Meili Team 26709* (PYU, SABG). *Use(s):* none documented.

Saxifraga nigroglandulifera N. P. Balakr.
Distribution: China. W Sichuan, S Xizang (Tibet), NW Yunnan [Bhutan, Nepal, Sikkim]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Saxifraga nigroglandulosa Engl. & Irmsch.
Distribution: China. W Sichuan, SE Xizang (Tibet), NW Yunnan [Myanmar (Burma)]. *Specimen: Meili Team 26280* (PYU, SABG). *Use(s):* medicinal.

Saxifraga pallida Wall. ex Ser.
Distribution: China. S Gansu, W Sichuan, SE Xizang (Tibet), NW Yunnan [Bhutan, N India, Kashmir, Nepal, Sikkim]. *Specimen: Meili Team 26193* (PYU, SABG). *Use(s):* none documented.

Saxifraga pellucida C. Y. Wu
Distribution: China. Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 26494* (PYU, SABG). *Use(s):* medicinal.

Saxifraga peraristulata Mattf.
Distribution: China. W Sichuan, NW Yunnan. *Specimen: Meili Team 26490* (PYU, SABG). *Use(s):* none documented.

Saxifraga pulchra Engl. & Irmsch.
Distribution: China. W Sichuan, Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 27509* (PYU, SABG). *Use(s):* none documented.

Saxifraga signata Engl. & Irmsch.
Distribution: China. S Qinghai, W Sichuan, E Xizang (Tibet), NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Saxifraga sinomontana J. T. Pan & Gornall
Distribution: China. S Gansu, Qinghai, S Shaanxi, W Sichuan, Xinjiang, E & S Xizang (Tibet), NW Yunnan [Bhutan, N India, Kashmir, Nepal, Sikkim]. *Specimen: Meili Team 26571* (PYU, SABG). *Use(s):* medicinal.

Saxifraga stella-aurea Hook. f. & Thomson
Distribution: China. S Qinghai, W Sichuan, Xizang (Tibet), W Yunnan [Bhutan, India, Nepal, Sikkim]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Saxifraga stenophylla Royle
Distribution: China. W Sichuan, E Xizang (Tibet), NW Yunnan [India, Kashmir, Nepal, Pakistan, Sikkim, Tajikistan]. *Specimen: Fang Zhendong 199* (SABG). *Use(s):* none documented.

Saxifraga tsangchanensis Franch.
Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Bee Gunn & Wayne Law 182* (MO, SABG). *Use(s):* none documented.

Saxifraga unguiculata Engl.
Distribution: China. S Gansu, WC Hebei, Qinghai, Nei Mongol, Ningxia, N Shanxi, W Sichuan, Xizang (Tibet), NW Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Saxifraga wallichiana Sternb.
Distribution: China. W Sichuan, E & S Xizang

(Tibet), N Yunnan [Bhutan, India, Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 26361* (PYU, SABG). *Use(s):* none documented.

Saxifraga wardii W. W. Sm.
Distribution: China. SE Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 26256* (PYU, SABG). *Use(s):* none documented.

Saxifraga yezhiensis C. Y. Wu
Distribution: China. Yunnan. *Specimen: Meilishi Team 49* (PYU, SABG). *Use(s):* none documented.

Saxifraga sp.
Specimen: Heidi Schmidt & Huang Fan 4167 (MO, SABG). *Use(s):* none documented.

Tiarella L.

Tiarella polyphylla D. Don
Distribution: China. SE Gansu, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, S Shaanxi, Sichuan, Taiwan, S Xizang (Tibet), Yunnan [Bhutan, N India, Japan, N Myanmar (Burma), Nepal, Sikkim]. *Specimen: Meili Team 25122* (PYU, SABG). *Use(s):* medicinal.

Schisandraceae

Schisandra Michx.

Schisandra neglecta A. C. Sm.
Distribution: China. Yunnan [Bhutan, NE India, Myanmar (Burma), Nepal]. *Specimen: Meili Team 24858* (PYU, SABG). *Use(s):* medicinal.

Schisandra rubriflora (Franch.) Rehder & E. H. Wilson
Distribution: China. W Sichuan, N Yunnan [NE India, N Myanmar (Burma)]. *Specimen: Meili Team 27319* (PYU, SABG). *Use(s):* medicinal.

Schisandra sphaerandra Stapf
Distribution: China. S Sichuan, N Yunnan. *Specimen: George Yatskievych 04-025* (KUN, MO). *Use(s):* medicinal.

Scrophulariaceae

Buddleja L.

Buddleja crispa Benth.
Distribution: China. Gansu, Sichuan, Xizang (Tibet), Yunnan [Afghanistan, Bhutan, N India, Nepal, Pakistan]. *Specimen: George Yatskievych 04-137* (KUN, MO). *Use(s):* medicinal, fertilizer, poisonous.

Hemiphragma Wall.—see Plantaginaceae

Lagotis Gaertn.—see Plantaginaceae

Neopicrorhiza D. Y. Hong—see Plantaginaceae

Pedicularis L.—see Orobanchaceae

Phtheirospermum Bunge ex Fisch. & C. A. Mey.—See Orobanchaceae

Verbascum L.

Verbascum thapsus L.
Distribution: China. Jiangsu, Sichuan, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang [Asia, Europe, naturalized throughout N Hemisphere]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Veronica L.—see Plantaginaceae

Simaroubaceae

Ailanthus Desf.

Ailanthus altissima (Mill.) Swingle
Distribution: China. Widely native, cultivated, and/or naturalized [widely cultivated and naturalized worldwide]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Ailanthus vilmoriniana Dode
Distribution: China. Hubei, Sichuan, Yunnan. *Specimen: Danica Anderson 131* (MO, SABG). *Use(s):* handcrafts.

Picrasma Blume

Picrasma quassioides (D. Don) Benn.
Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Japan, Kashmir, Korea, Nepal, Sri Lanka]. *Specimen: Meili Team 27413* (PYU, SABG). *Use(s):* medicinal, handcrafts, firewood.

Smilacaceae

Heterosmilax Kunth

Heterosmilax japonica Kunth

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Hunan, Jiangxi, S Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang [Bhutan, NE India, Japan]. *Specimen: Danica Anderson, Jan Salick, Bee Gunn, Yin Xuezhen, & An Na 394* (MO, SABG). *Use(s):* medicinal.

Smilax L.

Smilax cyclophylla Warburg

Distribution: China. Sichuan, Yunnan. *Specimen: George Yatskievych 04-049* (KUN, MO). *Use(s):* none documented.

Smilax darrisii H. Lév.

Distribution: China. Guizhou, Sichuan, Yunnan. *Specimen: Jessica Woo & Ruth Sherman 516* (MO, SABG). *Use(s):* none documented.

Smilax discotis Warb.

Distribution: China. Anhui, Fujian, Gansu, Guizhou, Henan, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Yunnan. *Specimen: Meili Team 25033* (PYU, SABG). *Use(s):* none documented.

Smilax elegans Wall. ex Kunth

Distribution: China. S Xizang (Tibet), Yunnan [Bhutan, India, Myanmar (Burma), Nepal]. *Specimen: Meili Team 24792* (PYU, SABG). *Use(s):* medicinal

Smilax menispermoidea A. DC.

Distribution: China. Gansu, Guizhou, Hubei, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, N India, Myanmar (Burma), Sikkim]. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn, Yin Xuezhen & Senadorji 304* (MO, SABG). *Use(s):* medicinal, forage and/or fodder

Solanaceae

Anisodus Link

Anisodus luridus Link

Distribution: China. Sichuan, SE Xizang (Tibet), NW Yunnan [Bhutan, India, Nepal]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal, poisonous

Capsicum l

Capsicum annuum l

Distribution: Cultivated worldwide. Report based on Fang Zhendong, pers. obs. *Use(s):* herb and/or spice

Datura L.

Datura stramonium L.

Distribution: Cultivated and naturalized worldwide. *Specimen: George Yatskievych 04-188* (KUN, MO). *Use(s):* medicinal, poisonous.

Hyoscyamus Scop.

Hyoscyamus niger L.

Distribution: China. Gansu, Guizhou, Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Yunnan [Afghanistan, India, Japan, Kazakhstan, Korea, Kyrgyzstan, Nepal, Pakistan, Russia, Tajikistan, Turkmenistan, Uzbekistan; cultivated worldwide]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal, poisonous.

Lycopersicon Mill.

Lycopersicon esculentum Mill.

Distribution: Cultivated worldwide. Report based on Fang Zhendong, pers. obs. *Use(s):* food.

Mandragora L.

Mandragora caulescens C. B. Clarke

Distribution: China. SE Qinghai, W Sichuan, E Xizang (Tibet), NW Yunnan [Bhutan, Sikkim, Nepal]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Solanum L.

Solanum lyratum Thunb.

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan,

Mandragora caulescens. Photograph by Fang Zhendong.

Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Cambodia, Japan, Korea, Laos, Myanmar (Burma), Thailand, Vietnam]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Solanum tuberosum L.

Distribution: China. Cultivated throughout [South America; cultivated worldwide]. *Specimen: Jan Salick 9719* (MO, SABG). *Use(s):* food.

Stachyuraceae

Stachyurus Siebold & Zucc.

Stachyurus himalaicus Hook. f. & Thomson

Distribution: China. Xizang (Tibet), Yunnan [Bhutan, N India, N Myanmar (Burma), Nepal]. *Specimen: Meili Team 27316* (PYU, SABG). *Use(s):* medicinal.

Symplocaceae

Symplocos Jacq.

Symplocos lucida (Thunb.) Siebold & Zucc.

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, Cambodia, India, Indonesia, Japan, Laos, Malaysia, Myanmar (Burma), Thailand, Vietnam]. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Tamaricaceae

Myricaria Desv.

Myricaria rosea W. W. Sm.

Distribution: China. SE Xizang (Tibet), NW Yunnan [Bhutan, India, Nepal]. Report based on Fang Zhendong, pers. obs. *Use(s):* medicinal.

Tetracentraceae—see Trochodendraceae

Thymelaeaceae

Daphne L.

Daphne aurantiaca Diels

Distribution: China. SW Sichuan, NW Yunnan. *Specimen: Meili Team 27444* (PYU, SABG). *Use(s):* medicinal, ornamental.

Daphne holosericea (Diels) Hamaya

Distribution: China. Sichuan, SE Xizang (Tibet), W Yunnan. *Specimen: Zhu Weiming 21439* (PYU). *Use(s):* religious, handcrafts, medicinal, tools, fertilizer.

Daphne longilobata (Lecomte) Turrill

Distribution: China. SW Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 27350* (PYU, SABG). *Use(s):* none documented.

Daphne tangutica Maxim.

Distribution: China. Gansu, Guizhou, W Hubei, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 27346* (PYU, SABG). *Use(s):* medicinal, religious, pesticide.

Stellera L.

Stellera chamaejasme L.

Distribution: China. Gansu, Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Bhutan, Mongolia, Nepal, Russia]. *Specimen: Meili Team 27908* (PYU, SABG). *Use(s):* medicinal, poisonous.

Wikstroemia Endl.

Wikstroemia baimashanensis S. C. Huang

Distribution: Yunnan. *Specimen: Meili Team 25503* (PYU, SABG). *Use(s):* none documented.

Wikstroemia canescens Wall. ex Meisn.

Distribution: China. Xizang (Tibet), Yunnan [Afghanistan, Bangladesh, India, Japan, Nepal, Pakistan]. *Specimen: Sun Hongyan 32* (KUN, MO). *Use(s):* none documented.

Wikstroemia ligustrina Rehder

Distribution: China. Hebei, Shaanxi, Shanxi, Sichuan, Yunnan. *Specimen: Meili Team 26061* (PYU, SABG). *Use(s):* none documented.

Wikstroemia techinensis S. C. Huang

Distribution: China. Yunnan. *Specimen: Meilishi Team 330* (PYU, SABG). *Use(s):* none documented.

Tiliaceae—see Malvaceae

Tofieldiaceae

Tofieldia Huds.

Tofieldia divergens Bureau & Franch.

Distribution: China. W Guizhou, SW Sichuan, Yunnan. *Specimen: Fang Zhendong 1680* (SABG). *Use(s):* medicinal.

Triplostegiaceae—see Caprifoliaceae

Trochodendraceae

Tetracentron Oliv.

Tetracentron sinense Oliv.

Distribution: China. S Gansu, Guizhou, SW Henan, W Hubei, NW & SW Hunan, S Shaanxi, Sichuan, S & SE Xizang (Tibet), Yunnan [Bhutan, NE India, N Myanmar (Burma), E Nepal, N Vietnam]. *Specimen: Jessica Woo, Ruth Sherman & Jan Salick 591* (MO, SABG). *Use(s):* medicinal.

Ulmaceae

Celtis L.—see Cannabaceae

Zelkova Spach

Zelkova schneideriana Hand.-Mazz.

Distribution: China. Anhui, Fujian, S Gansu, Guangdong, Guangxi, Guizhou, S Henan, Hubei, Hunan, Jiangsu, Jiangxi, S Shaanxi, SE Sichuan, SE Xizang (Tibet), Yunnan, Zhejiang. Report based on Fang Zhendong, pers. obs. *Use(s):* forage and/or fodder.

Urticaceae

Debregeasia Gaudich.

Debregeasia edulis (Siebold & Zucc.) Wedd.

Distribution: Yunnan [Japan]. *Specimen: Jan Salick et al. 9365* (MO, SABG). *Use(s):* food, forage and/or fodder.

Debregeasia orientalis C. J. Chen

Distribution: China. Hubei, Hunan, S Gangsu, Guangxi, Guizhou, S Shaanxi, Sichuan, Taiwan, SE Xizang (Tibet), Yunnan [Bhutan, India, Japan, Nepal]. *Specimen: Meili Team 25246* (PYU, SABG). *Use(s):* medicinal.

Elatostema J. R. Forst. & G. Forst.

Elatostema obtusum Wedd.

Distribution: China. Fujian, S Gansu, N Guangdong, N Guangxi, SE Guizhou, W Hubei, NW & SE Hunan, W Jiangxi, S Shaanxi, Sichuan, Taiwan, SE Xizang (Tibet), Yunnan, S Zhejiang [Bhutan, NE India, Nepal, the Philippines, Sikkim, Thailand]. *Specimen: Meili Team 27329* (PYU, SABG). *Use(s):* none documented.

Laportea Gaudich.

Laportea bulbifera (Siebold & Zucc.) Wedd.

Distribution: China. Anhui, N Fujian, Gansu, N Guangdong, N Guangxi, Guizhou, Hebei, Henan, Heilongjiang, Hubei, Hunan, Jiangxi, Jilin, Liaoning, Shaanxi, Shandong, Shanxi, Sichuan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Indonesia, Japan, Korea, Myanmar (Burma), Russia, Sikkim, Sri Lanka]. *Specimen: Meili Team 26212* (PYU, SABG). *Use(s):* medicinal.

Laportea cuspidata (Wedd.) Friis

Distribution: China. Anhui, SE Gansu, N Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangxi, S Shaanxi, Sichuan, SE Xizang (Tibet), Yunnan [Japan, Myanmar (Burma)]. *Specimen: Meili Team 26378* (PYU, SABG). *Use(s):* none documented.

Pilea Lindl.

Pilea martinii (H. Lév.) Hand.-Mazz.

Distribution: China. S Gangsu, N Guangxi, Guizhou, Hubei, Hunan, Jiangxi, S Shaanxi, E Sichuan, S Xizang (Tibet), Yunnan [Bhutan, Nepal, Sikkim]. *Specimen: Meili Team 26850* (PYU, SABG). *Use(s):* forage and/or fodder.

Pilea pumila (L.) A. Gray

Distribution: China. Anhui, Chongqing, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang (Tibet), Yunnan, Zhejiang [Japan, Korea, Mongolia; naturalized worldwide]. *Specimen: Danica Anderson, Jan Salick, Bee F. Gunn & Yin Xuezhen 357* (MO, SABG). *Use(s):* forage and/or fodder.

Urtica L.

Urtica laetevirens Maxim.

Distribution: China. Anhui, Gansu, Hebei, Heilongjiang, Henan, Hubei, Hunan, E Jilin, Liaoning, Nei Mongol, SE Qinghai, Shaanxi,

Shandong, Shanxi, Sichuan, SE Xizang (Tibet), Yunnan [Japan, Korea, E Russia]. *Specimen: Meili Team 25093* (PYU, SABG). *Use(s):* medicinal.

Urtica triangularis Hand.-Mazz.

Distribution: China. Gansu, Qinghai, W Sichuan, E Xizang (Tibet), NW Yunnan. *Specimen: Meili Team 24716* (PYU, SABG). *Use(s):* food, medicinal.

Valerianaceae—see Caprifoliaceae

Verbenaceae

Caryopteris Bunge—see Lamiaceae

Clerodendrum L.—see Lamiaceae

Verbena L.

Verbena officinalis L.

Distribution: China. Naturalized throughout [naturalized worldwide]. *Specimen: George Yatskievych 04-159* (KUN, MO). *Use(s):* medicinal.

Vitex L.—see Lamiaceae

Violaceae

Viola L.

Viola acuminata Ledeb.

Distribution: China. Anhui, Gansu, Hebei, Heilongjiang, Henan, Hubei, Jilin, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shandong, Shanxi, Sichuan, Yunnan, Zhejiang [Japan, Korea, Mongolia, Russia]. *Specimen: George Yatskievych 04-032* (KUN, MO). *Use(s):* religious, construction.

Viola arcuata Blume

Distribution: China. Anhui, Chongqing, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shaanxi, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang [Bhutan, India, Indonesia, Japan, Korea, Malaysia, Mongolia, Myanmar (Burma), Papua New Guinea, Nepal, Russia, Thailand, Vietnam]. *Specimen: Kurt Hoffmeister, Deng Zhiwei & Anthony Amend 169* (MO, SABG). *Use(s):* medicinal.

Viola belophylla H. Boissieu

Distribution: Sichuan, SW Xizang (Tibet), Yunnan. *Specimen: Wayne Law 93* (MO, SABG). *Use(s):* medicinal.

Viola biflora L.

Distribution: China. Gansu, Hebei, Heilongjiang, Henan, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan [Bhutan, NE India, Indonesia (N Sumatra), Japan, Kashmir, Korea, Malaysia, Mongolia, Myanmar (Burma), Nepal, Russia; Europe, North America]. *Specimen: Meili Team 25603* (PYU, SABG). *Use(s):* medicinal.

Viola bulbosa Maxim.

Distribution: China. Gansu, Qinghai, Shaanxi, Sichuan, Xizang (Tibet), Yunnan [Bhutan, N India, Nepal]. *Specimen: George Yatskievych 04-006* (KUN, MO). *Use(s):* medicinal.

Viola collina Besser

Distribution: China. Anhui, Chongqing, Gansu, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Jiangsu, Jilin, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shandong, Shanxi, Sichuan, NW Yunnan, Zhejiang [Japan, Korea, Mongolia, Russia, Tajikistan; Europe]. *Specimen: Peng Shengjing 5* (KUN, MO). *Use(s):* medicinal.

Viola delavayi Franch.

Distribution: China. Guizhou, Sichuan, Yunnan. *Specimen: Meili Team 25059* (PYU, SABG). *Use(s):* medicinal.

Viola kunawurensis Royle

Distribution: China. Gansu, Qinghai, NW Sichuan, Xinjiang, Xizang (Tibet), Yunnan [Afghanistan, N India, Kashmir, Kazakhstan, Kyrgyzstan, W Mongolia, Nepal, Russia, Tajikistan]. *Specimen: Danica Anderson 45* (MO, SABG). *Use(s):* none documented.

Viola moupinensis Franch.

Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, Sikkim, Nepal]. *Specimen: Meili Team 25037* (PYU, SABG). *Use(s):* medicinal.

Viola obtusa (Makino) Makino

Distribution: Taiwan, Yunnan. *Specimen: Bee Gunn 213* (MO, SABG). *Use(s):* none documented.

Viola odorata L.

Distribution: China. Widely cultivated [native

to N Africa, C & SW Asia, Europe; cultivated worldwide]. *Specimen: Danica Anderson 253* (MO, SABG). *Use(s):* medicinal.

Viola rupestris F. W. Schmidt
Distribution: China. SE Gansu, S Shaanxi, S Shanxi, Xinjiang, Yunnan [Kashmir, Kazakhstan, Kyrgyzstan, Mongolia, N Pakistan, Russia, Tajikistan; SW Asia, Europe]. *Specimen: Jessica Woo, Ruth Sherman & Jan Salick 665* (MO, SABG). *Use(s):* none documented.

Viola szetschwanensis W. Becker & H. Boissieu
Distribution: China. W Sichuan, Xizang (Tibet), N Yunnan [Nepal]. *Specimen: Meili Team 27327* (PYU, SABG). *Use(s):* none documented.

Viola tenuissima Chang
Distribution: China. N Guizhou, W Sichuan, Yunnan. *Specimen: Jessica Woo & Ruth Sherman 432* (MO, SABG). *Use(s):* none documented.

Viola tricolor L.
Distribution: China. Widely cultivated [native to Europe; cultivated worldwide]. *Specimen: Jan Salick 9735A* (SABG). *Use(s):* none documented.

Viola urophylla Franch.
Distribution: Sichuan, W Yunnan. Report based on Fang Zhendong, pers. obs. *Use(s):* none documented.

Viola yunnanfuensis W. Becker
Distribution: China. Guangxi, Guizhou. Sichuan, S Xizang (Tibet), Yunnan [Bhutan]. *Specimen: Meili Team 27267* (PYU, SABG). *Use(s):* medicinal.

Viscaceae—see Santalaceae

Vitaceae

Ampelopsis Michx.

Ampelopsis acutidentata W. T. Wang
Distribution: China. Sichuan, Xizang (Tibet), Yunnan. *Specimen: Meili Team 26064* (PYU, SABG). *Use(s):* none documented.

Parthenocissus Planch.

Parthenocissus semicordata (Wall.) Planch.
Distribution: China. Gansu, Guangdong, Guizhou, Hunan, Hubei, Jiangxi, S Shaanxi, Sichuan, Yunnan, Zhejiang [Bhutan, India, Indonesia, Malaysia, Myanmar (Burma), Nepal, Thailand, Vietnam]. *Specimen: Jessica Woo, Ruth Sherman & Jan Salick 632* (MO, SABG). *Use(s):* ornamental.

Vitis L.

Vitis betulifolia Diels & Gilg
Distribution: China. SE Gansu, Henan, Hubei, Hunan, Shaanxi, Sichuan, Yunnan. *Specimen: Meili Team 24854* (PYU, SABG). *Use(s):* medicinal, forage and/or fodder.

Vitis flexuosa Thunb.
Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Henan, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang [India, Japan, Laos, Nepal, the Philippines, Thailand, Vietnam]. *Specimen: Meili Team 27372* (PYU, SABG). *Use(s):* food, medicinal.

Vitis heyneana Roem. & Schult.
Distribution: China. Anhui, Chongqing, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Shanxi, Sichuan, Xizang (Tibet), Yunnan, Zhejiang [Bhutan, India, Nepal]. *Specimen: George Yatskievych 04-096* (KUN, MO). *Use(s):* none documented.

Vitis vinifera L.
Distribution: China. Widely cultivated [cultivated worldwide]. Report based on Fang Zhendong, pers. obs. *Use(s):* food, alcoholic beverage.

Zingiberaceae

Roscoea Sm.

Roscoea tibetica Batalin
Distribution: China. Yunnan [Bhutan, India, Kashmir, Myanmar, Nepal, Sikkim, Vietnam]. *Specimen: Danica Anderson, Jan Salick & Peiji 162* (MO, SABG). *Use(s):* medicinal.

Zygophyllaceae

Tribulus L.

Tribulus terrestris L.
Distribution: China. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia,

Tribulus terrestris. Photograph by Fang Zhendong.

Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang (Tibet), Yunnan, Zhejiang [naturalized almost worldwide]. *Specimen: Meili Team 26486* (PYU, SABG). *Use(s):* medicinal.

APPENDIX 3

PRELIMINARY CHECKLIST OF WILD MAMMALS AND BIRDS

Compiled by Robert K. Moseley

NOMENCLATURE FOR scientific and common names follows Wilson and Reeder (2005) for mammals and MacKinnon and Phillipps (2000) for birds. Also, see Wang (2003) and the Chinese Biodiversity Information System for mammal species in China.

MAMMALS

Soricomorpha

Talpidae	
Scaptonyx fusicaudus Milne-Edwards	long-tailed mole
Soricidae	
Blarinella quadraticauda Milne-Edwards	Asiatic short-tailed shrew
Chimarrogale styani De Winton	Chinese water shrew
Crocidura horsfieldii Tomes	Horsfield's shrew
Crocidura rapax G. Allen	Chinese white-toothed shrew
Crocidura shantungensis Miller	Asian lesser white-toothed shrew
Episoriculus leucops Horsfield	long-tailed brown-toothed shrew
Episoriculus macrurus Blanford	long-tailed mountain shrew
Nectogale elegans Milner-Edwards	elegant water shrew
Sorex bedfordiae Thomas	lesser striped shrew

PRIMATES

Cercopithecidae

Macaca assamensis M'Clelland	Assam macaque
Macaca mulatta Zimmermann	Rhesus monkey

MAMMALS continued

Carnivora	
Canidae	
Canis lupus Linnaeus	gray wolf
Cuon alpinus Pallas	dhole
Vulpes vulpes Linnaeus	red fox
Vulpes ferrilata Hodgson	Tibetan sand fox
Ursidae	
Ursus arctos Linnaeus	brown bear
Ursus thibetanus F. G. Cuvier	Asian black bear
Ailuridae	
Ailurus fulgens F. G. Cuvier	red panda
Mustelidae	
Lutra lutra Linnaeus	European otter
Martes flavigula Boddaert	yellow-throated marten
Viverridae	
Paguma larvata C. E. H. Smith	masked palm civet
Viverra zibetha Linnaeus	large Indian civet
Felidae	
Felis chaus Schreber	jungle cat
Lynx lynx Linnaeus	lynx
Neofelis nebulosa Griffith	clouded leopard
Panthera pardus Linnaeus	leopard
Prionailurus bengalensis Kerr	leopard cat
Uncia uncia Schreber	snow leopard

Artiodactyla	
Suidae	
Sus scrofa Linnaeus	wild boar
Moschidae	
Moschus berezovskii Flerov	forest musk deer
Moschus chrysogaster Hodgson	alpine musk deer
Moschus fuscus Li	black musk deer
Cervidae	
Elaphodus cephalophus Milne-Edwards	tufted deer
Muntiacus feae Thomas & Doria	Fea's muntjac
Rusa unicolor Kerr	sambar deer

MAMMALS continued

Bovidae	
Naemorhedus caudatus Milne-Edwards	Chinese goral
Naemorhedus cranbrooki Hayman	red goral
Naemorhedus sumatraensis Bechstein	serow
Pseudois nayaur Hodgson	blue sheep (bharal)

Rodentia

Sciuridae	
Callosciurus erythraeus Pallas	Pallas's squirrel
Marmota himalayana Hodgson	Himalayan marmot
Petaurista alborufus Milne-Edwards	red and white giant flying squirrel
Petaurista elegans Müller	spotted giant flying squirrel
Petaurista xanthotis Milne-Edwards	Chinese great flying squirrel
Ratufa bicolor Sparrman	black giant squirrel
Tamiops swinhoei Milne-Edwards	Swinhoe's striped squirrel
Trogopterus xanthipes Milne-Edwards	complex-toothed flying squirrel
Cricetidae	
Eothenomys custos Thomas	southwest China red-backed vole
Eothenomys wardi Thomas	Ward's red-backed vole
Neodon irene Thomas	Irene's mountain vole
Muridae	
Apodemus peninsulae Thomas	Korean field mouse
Apodemus latronum Thomas	large-eared field mouse
Apodemus draco Barrett-Hamilton	south China field mouse
Apodemus chevrieri Milne-Edwards	Chevrier's field mouse
Niviventer andersoni Thomas	Anderson's niviventer
Rattus pyctoris Hodgson	Himalayan rat
Spalacidae	
Rhizomys pruinosus Blyth	hoary bamboo rat
Dipodidae	
Sicista concolor Büchner	Chinese birch mouse
Zapodinae	
Eozapus setchuanus Pousargues	Chinese jumping mouse

Lagomorpha

Ochotonidae	
Ochotona (Conothoa) macrotis Günther	large-eared pika
Ochotona (Conothoa) roylei Ogilby	Royle's pika

MAMMALS continued

Ochotona (Ochotona) thibetana Milne-Edwards	moupin pika
Ochotona (Conothoa) erythrotis Büchner	Chinese red pika
Ochotona (Conothoa) gloveri Thomas	Glover's pika
Leporidae	
Lepus (Eulagos) comus Allen	Yunnan hare
Lepus oiostolus Hodgson	woolly hare

BIRDS

Galliformes

Phasianidae	
Chrysolophus amherstiae Leadbeater	Lady Amherst's pheasant
Crossoptilon crossoptilon Hodgson	white-eared pheasant
Ithaginis cruentus Hardwicke	blood pheasant
Phasianus colchicus Linnaeus	common pheasant
Pucrasia macrolopha Lesson	Koklass pheasant
Tetraogallus tibetanus Gould	Tibetan snowcock
Tetraophasis szechenyii Madarász	buff-throated partridge
Tetrastes sewerzowi Przewalski	Chinese grouse
Tragopan blythii Jerdon	Blyth's tragopan
Tragopan temminckii Gray	Temminck's tragopan

Piciformes

Picidae	
Dendrocopos canicapillus Blyth	grey-capped pygmy woodpecker
Dendrocopos darjellensis Blyth	Darjeeling woodpecker
Dendrocopos hyperythrus Vigors	rufous-bellied woodpecker
Dendrocopos major Linnaeus	great spotted woodpecker
Dryocopus javensis Tristan	white-bellied woodpecker
Dryocopus martius Linnaeus	black woodpecker
Picoides tridactylus Linnaeus	three-toed woodpecker
Picus canus Gmelin	grey-headed woodpecker
Picus chlorolophus Vieillot	lesser yellownape
Megalaimidae	
Megalaima virens Boddaert	great barbet

Upupiformes

Upupidae	
Upupa epops Linnaeus	common hoopoe

BIRDS continued

Coraciiformes	
Alcedinidae	
Halcyon pileata Boddaert	black-capped kingfisher
Cuculiformes	
Cuculidae	
Cuculus canorus Linnaeus	common cuckoo
Cuculus saturatus Blyth	oriental cuckoo
Psittaciformes	
Psittacidae	
Psittacula derbiana Fraser	Derbyan parakeet
Apodiformes	
Apodidae	
Apus pacificus Latham	fork-tailed swift
Hirundapus caudacutus Latham	white-throated needletail
Strigiformes	
Strigidae	
Bubo bubo Linnaeus	Eurasian eagle-owl
Caprimulgidae	
Caprimulgus indicus Latham	Grey nightjar
Columbiformes	
Columbidae	
Columba hodgsonii Vigors	speckled wood pigeon
Columba leuconota Vigors	snow pigeon
Columba rupestris Pallas	hill pigeon
Streptopelia chinensis Scopoli	spotted dove
Streptopelia orientalis Latham	oriental turtle dove
Treron sphenura Vigors	wedge-tailed green pigeon
Ciconiiformes	
Charadriidae	
Charadrius dubius Scopoli	little ringed plover

BIRDS continued

Accipitridae	
Accipiter virgatus Temminck	besra
Aegypius monachus Linnaeus	cinereous vulture
Aquila chrysaetos Linnaeus	golden eagle
Buteo buteo Linnaeus	common buzzard
Gypaetus barbatus Linnaeus	lammergeier
Gyps himalayensis Hume	Himalayan griffon
Falconidae	
Falco tinnunculus Linnaeus	common kestrel
Ardeidae	
Ardeola bacchus Bonaparte	Chinese pond heron
Passeriformes	
Laniidae	
Lanius tephronotus Vigors	grey-backed shrike
Corvidae	
Corvus corone Linnaeus	carrion crow
Corvus dauuricus Pallas	Daurian jackdaw
Corvus macrorhynchos Wagler	large-billed crow
Dicrurus leucophaeus Vieillot	ashy drongo
Dicrurus macrocercus Vieillot	black drongo
Nucifraga caryocatactes Linnaeus	spotted nutcracker
Oriolus chinensis Linnaeus	black-naped oriole
Pericrocotus ethologus Bangs & Phillips	long-tailed minivet
Pericrocotus solaris Blyth	gray-chinned minivet
Pica pica Linnaeus	black-billed magpie
Pyrrhocorax pyrrhocorax Linnaeus	red-billed chough
Rhipidura hypoxantha Blyth	yellow-bellied fantail
Urocissa erythrorhyncha Boddaert	red-billed blue magpie
Cinclidae	
Cinclus cinclus Linnaeus	white-throated dipper
Cinclus pallasii Temminck	brown dipper
Muscicapidae	
Cyornis banyumas Horsfield	hill blue flycatcher
Cyornis rubeculoides Vigors	blue-throated flycatcher
Chaimarrornis leucocephalus Vigors	white-capped water redstart
Ficedula strophiata Hodgson	rufous-gorgeted flycatcher
Ficedula tricolor Hodgson	slaty-blue flycatcher
Hodgsonius phaenicuroides Gray	white-bellied redstart

BIRDS continued

Monticola solitarius Linnaeus	blue rock thrush
Myophonus caeruleus Scopoli	blue whistling thrush
Niltava davidi La Touche	Fujian niltava
Phoenicurus auroreus Pallas	Daurian redstart
Phoenicurus frontalis Vigors	blue-fronted redstart
Phoenicurus schisticeps Gray	white-throated redstart
Rhyacornis fuliginosus Vigors	plumbeous water redstart
Turdus rubrocanus Hodgson	chestnut thrush
Sittidae	
Sitta leucopsis Gould	white-cheeked nuthatch
Sitta europaea Linnaeus	Eurasian nuthatch
Tichodroma muraria Linnaeus	wallcreeper
Certhiidae	
Troglodytes troglodytes Linnaeus	winter wren
Paridae	
Parus dichrous Blyth	grey-crested tit
Parus major Linnaeus	great tit
Parus monticolus Vigors	green-backed tit
Parus palustris Linnaeus	marsh tit
Parus rubridiventris Blyth	rufous-vented tit
Parus superciliosus Przewalski	white-browed tit
Hirundinidae	
Delichon dasypus Bonaparte	Asian house martin
Hirundo rupestris Scopoli	Eurasian crag martin
Hirundo rustica Linnaeus	barn swallow
Riparia riparia Linnaeus	sand martin
Pycnonotidae	
Hypsipetes leucocephalus Gmelin	black bulbul
Pycnonotus xanthorrhous Anderson	brown-breasted bulbul
Cisticolidae	
Prinia polychroa Temminck	brown prinia
Sylviidae	
Alcippe dubia Hume	rusty-capped fulvetta
Alcippe vinipectus Hodgson	white-browed fulvetta
Babax lanceolatus Verreaux	Chinese babax
Garrulax elliotii Verreaux	Elliot's laughingthrush
Garrulax maximus Verreaux	giant laughingthrush
Heterophasia melanoleuca Blyth	black-headed sibia
Phylloscopus affinis Tickell	Tickell's leaf warbler
Phylloscopus armandii Milne-Edwards	yellow-streaked warbler

BIRDS continued

Phylloscopus magnirostris Blyth	large-billed leaf warbler
Phylloscopus pulcher Blyth	buff-barred warbler
Phylloscopus reguloides Blyth	Blyth's leaf warbler
Phylloscopus trochiloides Sundevall	greenish warbler
Pomatorhinus erythrogenys Vigors	rusty-cheeked scimitar babbler
Pomatorhinus ruficollis Hodgson	streak-breasted scimitar babbler
Seicercus burkii E. Burton	golden-spectacled warbler
Spelaeornis troglodytoides Verreaux	bar-winged wren babbler
Yuhina diademata Verreaux	white-collared yuhina
Yuhina gularis Hodgson	stripe-throated yuhina
Nectariniidae	
Aethopyga gouldiae Vigors	Mrs. Gould's sunbird
Dicaeum ignipectus Blyth	fire-breasted flowerpecker
Dicaeum melanozanthum Blyth	yellow-bellied flowerpecker
Passeridae	
Anthus hodgsoni Richmond	olive-backed pipit
Carpodacus pulcherrimus Moore	beautiful rosefinch
Carpodacus thura Bonaparte & Schlegel	white-browed rosefinch
Carpodacus vinaceus Verreaux	vinaceous rosefinch
Emberiza cia Linnaeus	rock bunting
Emberiza elegans Temminck	yellow-throated bunting
Emberiza godlewskii Taczanowski	Godlewski's bunting
Motacilla alba Linnaeus	white wagtail
Motacilla cinerea Tunstall	grey wagtail
Motacilla grandis Sharpe	Japanese wagtail
Mycerobas carnipes Hodgson	white-winged grosbeak
Passer montanus Linnaeus	Eurasian tree sparrow
Passer rutilans Temminck	russet sparrow
Prunella immaculata Hodgson	maroon-backed accentor
Prunella rubeculoides Moore	robin accentor
Prunella strophiata Blyth	rufous-breasted accentor
Pyrrhula erythaca Blyth	grey-headed bullfinch

Pseudois nayaur (bharal, also known as blue sheep). Photo by Ben Staver.

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